Computer Weekly
Thursday, March 5, 1981

BBC will use Acorn Atom in micro series

by Paul Fisher

BBC executive producer John Radcliffe confirmed on Monday that Acorn Computers of Cambridge has been awarded the contract to supply the minicomputer for a televisioo educational series.

The contract provides a double bonus to Acorn because the DoI has been waiting on the BBC's decision before completing the prize-giving for its recent National School's Microcomputer Competition. The 536 schools which did not receive prizes will now be awarded Acorn microcomputers.

The ten-part series, provisionally called Hands on Micros, is due to be broadcast at the beginning of 1982.

The BBC microcomputer will be a modified version of the Acorn Atom, some 7,000 of which have been sold since last May. Its Basic will be close to the Microsoft version and will also include procedures. The BBC specified keyboard improvements, so the new model uses field contact switches and has an extra 10 user-programmable keys.

It is being re-packaged in a larger box which is likely to be black and sell at just over £200.

A disc interface is built in, as are A/D inputs, high resolution graphics and an Econet capability. A standard option, to be priced at about £100, is a teletext receiver for the direct downloading of telesoftware.

The strongest contender for the contract was Newbury Labs' Newbrain but it dropped out of the running when no product appeared to match up to its promises. Transam, Tangerine and Sinclair Research's ZX80 were all mentioned as having a chance.

The Acorn product will be marketed by BBC Enterprises and carry a BBC logo. There have been rumours of legal action over the BBC's use of its monopoly position but these have been vigorously denied by all concerned.

Acorn's managing director Hermann Hauser (left) with sales director Chris Curry. Hauser is holding an Acorn Atom microcomputer which is similar to the model the BBC has ordered to support its forthcoming TV series.

Compeda lands $2m software contract

by Keith Jooes

AN important breakthrough into the US market has been made by Compeda in one of the largest single contracts for British software for an American customer.

Under the $2 million agreement Compeda, the National Research and Development Corporation subsidiary which markets computer-aided desigo software, will supply its Plant Design Management System to C. E. Lummus, one of the largest engineering construction companies in the world.

The package, described by Compeda managing director Keith Trickett as a "world beater", is for three-dimensional plant and pipework design.

Built to be transportable, PDMS will run on Prime minicomputers at C. E. Lummus locations in North America and Europe, and also on Control Data Cyber mainframes operated by the C. E. Lummus parent company, Combustion Engineering, at its Windsor, Connecticut, computer centre. The Prime and CDC hosted systems will be interfaced.

Developed originally at the Computer-Aided Design Centre at Cambridge, PDMS is expected by Keith Trickett to provide about half Compeda's turnover in its 1981/82 year starting in April. With the Lummus contract under its belt, Compeda will record a turnover of around £2 million for 1980/81 and probably break even according to Trickett. In 1979/80 the firm made a £450,000 loss on a £1 million turnover.

Compeda acquired the worldwide marketing rights to PDMS in 1977 and Keith Trickett says that no other pipework design package in the world can match it. It enables a designer to build a detailed three-dimensional model of the plant within the host computer.

Hughes . . . top ten UK companies have larger range of specialisation than in US and France.

'Back UK' plea

by Kevin Cahill

THE government must get behind the UK software industry, giving it better tax treatment, export assistance, and development funds.

This was the urgent plea made at a recent London BCS meeting by Philip Hughes, managing director of UK software house Logica.

Hughes said that the UK bureau, consultancy and software industry was one-third and one-tenth the size of its French and US equivalents respectively.

In the UK, over 50% of all bureaux, software and consultancy services were produced by ten large companies. In the 45% public sector-supported US industry, the picture is fragmented, with many small local software companies leading to a high degree of specialisation.

The top ten UK companies had a much larger range of specialisations than the US companies, and were readier to go abroad.

Further statistics produced by Hughes showed that only 4% of sales in the UK software and services industry were of complete software packages.

Canadian firm in US coup

by Rory Johnston

CANADIAN viewdata system Telidon has staged a major coup in winning preference over its British and French rivals for five separate US trial systems.

While some of these will provide business information, others will be bringing newspapers and magazines into homes by telephone line and television cable.

The Times Mirror company in Los Angeles will install 200 sets in private homes, half of them with interactive capability. Not only will news pages from the Los Angeles Times, Popular Science and Skiing magazines be accessible, but home banking and shopping will be provided.

Cable television already has one channel devoted entirely to advertising. This will be extended, allowing users to key in choices and quantities of goods and their account numbers.

Goods will then be delivered by mail or parcels service, but which banks will be involved is a question yet to be decided.

Another trial will be run by the publishers of Time magazine, who already operate a cable TV service. Surprisingly, this will work as a teletext service, inserting pages of magazines on the blanking lines between television frames.

Telidon uses more lines than the UK Ceefax system and will have rather more capacity, about 20 magazines of 120 pages each.

Other trials using Telidon are to be run by General Telephone and Electronics, for a business information service, Cox Cable TV in San Diego and TV station WETA in Washington DC.

Pergamon Press buys liquidated Infotech

ROBERT Maxwell's Pergamon Press has ventured further into the world of computers with the surprise purchase of conference and course organiser Infotech. A price of £135,000 is being widely mentioned but this has not been confirmed by either party.

Infotech, which went into voluntary liquidation at the beginning of February with debts in excess of £1 million, has been renamed Pergamon-Infotech. Although the Nicholson House headquarters in Maidenhead has been retained, between 60 and 70 jobs have been lost.

Chris Boon, who has kept his position as managing director, says: "We will be concentrating across the whole range of our products. A State of the Art conference is being held in June and courses will be resumed by the end of March." Keith Robinson and John Guy have also remained on the new board as product director and financial director.

They are joined by a Pergamon infusion headed by chairman Maxwell plus former Logica man Tom Diment and deputy managing director Alan Stephen.

Infotech founder Roy Goodman, who has been estranged from the rest of the old Infotech board, believes that Maxwell has been interested in Infotech for a number of months. This is denied by Chris Boon, who says that he first heard of Maxwell's intentions on February 21. "I was staggered," said Boon, "it came straight out of the blue."

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VAT and DHSS payments dry up

DP staff stop State computers

by Nicholas Eotícknap

GOVERNMENT computer systems used for record-keeping, revenue collection and defence administration were being brought to a standstill by the Civil Service unions this week. The action, announced on Sunday and put into effect on Tuesday after the one-day national strike on Monday, spearheads a package of measures designed to exert the maximum pressure on government.

"The action is the first step in a continuing campaign devised by nine Civil Service unions following the failure of pay negotiations and the government's refusal to improve a 7% pay offer.

Other computer installations may also be affected if the dispute is not resolved soon.

The computer systems affected so far are the VAT installation at Southend, the DHSS installation used for recording National Insurance contributions at Newcastle, and seven Royal Navy installations used for spare parts and armaments control.

The VAT installation at Southend is experiencing strike action for the second time, having been closed down for several weeks early in 1979 as a result of strike action by members of the Civil and Public Servants Association (CPSA) and the Society of Civil and Public Servants (SCPS), both of which are involved in the present dispute.

According to SCPS general secretary Gerry Gillman, the effect of the loss of revenue to the government last time was a substantial increase in the Public Sector Borrowing Requirement, leading to the big jump in the Minimum Lending Rate in the autumn of 1979. And at that time the VAT rate was only eight per cent, compared with 15 per cent now.

The action involves data preparation staff at the installation, and means that VAT records will not be updated. The government will therefore have no means of knowing who owed them what, nor of calculating returns of VAT

● Turn to back page

Civil Service leaders last weekend announcing their plans for disrupting government computers (from left): Tony Christopher, general secretary of the Inland Revenue Staff Federation; Kate Losinska, president of the Civil and Public Services Association; Bill Kendall, secretary general of the Council of Civil Service Unions; Gerry Gillman, general secretary of the Society of Civil and Public Servants; William McCall, general secretary of the Institution of Professional Civil Servants; and John Ward, general secretary of the First Division Association.

NHS work-to-rule action escalates

A SETTLEMENT of industrial action by computer staff within the National Health Service looked doubtful earlier this week as the union involved, the National Association of Local Government Officers (NALGO), met the employers at conciliation meetings held by the government's Advisory, Conciliation and Arbitration Service (ACAS).

The union is in dispute over a long-standing claim for parity for computer staff at Regional Health Authority computer centres with their counterparts in the private sector. The union is claiming an extra £500-£1,000 per person to match wages outside the Health service. The cost nationally is estimated by the union to be about £1.2 million.

Computer staff at regional computer centres are working to rule, but action has escalated at two of them: the North West Regional computer centre at Prestwich, Manchester and the South West Region at Bristol.

In Manchester a strike of computer staff now involves 55 of the estimated 105 people in the centre, and follows the removal by two senior managers of about £9 million of cheques processed through the computer which had accumulated as a backlog because of the work to rule.

In Bristol the work to rule has resulted in 30 staff being locked out on Mondays and Fridays because of a management assertion that they were working at only three fifths of normal levels anyway.

For national action to be called off, it had to be lifted by the union's strike operations committee which was due to meet yesterday (Wednesday). The meeting at ACAS was for conciliation only, not arbitration, which is binding on the parties involved.

NEWS BRIEF

Pactel wins PAYE deal

PROJECT control of the prestigious scheme to computerise the Inland Revenue's PAYE system, will be handled by London-based management consultant, PA Computers and Telecommunications. The contract is the first to be announced since ICL won th[...] share of the hardw[...] December.

Three Pact[...]sultants will [...] allocated to [...]project until its completion in [...]88. With Inland Revenue staff [...] will co-ordinate [...] all work on the project and [...] provide training on project control techniques.

Viewdata invite

PROPOSALS are invited by the end of next week (March 20) for the Department of Industry's pilot private viewdata system, the specification for which has just been issued. The pilot scheme is to run on a bureau machine for about a year starting this summer. It is to carry 20,000 frames of information and support 50 terminals in London, Manchester and South Wales.

Staff transfer

BURROUGHS' acute awareness of its deficiencies in the customer support area was stressed by its new chairman, Michael Blumenthal, when he flew into London last week. Blumenthal said staff were being transferred to customer support from marketing and revealed that a support resources control centre would be opened shortly in the Midlands. See page 23.

'Pirates' take most of micro software trade

by Claire Gooding

LARGE-SCALE piracy and illicit copying are being blamed for an alarming drop in the market for [...] program cassettes to 40% of [...] last year.

[...], including Commodore itself, might put the figure [...]," suggested Julian Allason, [...] magazine Printout [...] Commodore Pet.

Allason, who once ran Petsoft, the company now incorporated into ACT Microsoft, told the audience at the Gower conference on software protection: "If I was starting now, I'm almost sure that if I based the decision on money alone I'd decide to be a pirate.

"The quickest way to make money is to change the title of a package and sell it by mail order, maybe, if feeling nervous, changing a few line numbers and removing serial numbers – oh, and if it's well-known and might be spotted as a copy, I'd be sure to describe it as a backup."

Allason pointed to two popular packages on the Commodore Pet, the WP Wordcraft WP system from Dataview, and Personal Software's Visicalc programming aid, marketed in the UK by ACT Microsoft, as prime targets. Before fitting a protective hardware/software interface, the UK publishers of Wordcraft thought they might be losing sales to the tune of 25% owing to bootlegging.

As for Visicalc, Printout had carried out a survey among readers – "no names, no pack drill" – and concluded that for every legitimate purchase there were about 2½ bootlegged copies.

Allason pointed an accusing fin-

● Turn to page 9

250 jobs lost at NCR

by Kevin Cahill

NCR is to make a quarter of the 1,000-strong workforce at its Dundee manufacturing plant redundant by June.

The company, which has announced improved turnover and profit for 1980, blamed the world economic recession and the strong pound for the need to reduce manning levels.

The Dundee plant makes cash dispensers and some of NCR's computer systems.

The company said discussions were continuing with the unions. But the Engineering Union's supervisory section TASS, which has a major presence in the factory, had not been contacted by its membership earlier this week.

INSIDE THIS WEEK'S ISSUE

Breaking new ground in private viewdata for the holiday industry

by Donald Kennett

SUCCESS with a private viewdata trial has led Olympic Holidays to set up a full service planning to serve 1,000 travel agents by September – the start of the 1982 summer bookings season.

Though modest by comparison with systems envisaged by larger rivals Thomas Cook and Thomson Holidays, Olympic has emerged as a pioneer in private viewdata in the holiday industry.

Trials of the system, called Sparta, started last October with just four travel agents. Olympic's data processing manager Geoff Slevin said that when the system was demonstrated at the Association of British Travel Agents' conference in Florence in December, Olympic was "inundated with requests to use the system."

On January 2 the capacity was increased to handle 25 agents and in the middle of February, after software changes had been made to incorporate users' suggestions on how the system should respond, 75 agents were kitted out with Sony or Cherry alphanumeric keyboards.

Expansion to a capacity for 1,000 agents must wait for the installation of a second Digital Equipment PDP-11/70 to be devoted entirely to Sparta, while the first 11/70 will continue to run general accounting systems, support development work and provide back up for Sparta.

The new machine has already been delivered, but in turn is waiting for the company to move to a bigger office in central London.

Interaction with Sparta differs from other current viewdata services, not only by requiring an alphanumeric keyboard instead of the numeric keypad supplied with all television-based viewdata terminals, but also by indulging in the heresy of conducting question and answer exchanges line by line until the screen is full, treating the terminal like a normal VDU – rather than exchanging one full viewdata page at a time as recommended by the keep-it-simple brigade.

Slevin says the line-by-line approach makes error-handling easier: the system can immediately cancel the line of input and tell the user the nature of the mistake.

He is also particularly proud of the "help-frame" response, which he considers to be an essential feature of any online system with remote users.

Relevant help-frames are summoned during inputting by typing a question mark and when the problem is clarified the system takes the agent back to where he or she left off in the booking process. A training mode allows the process to be simulated.

Riding the crest of new technology: Basil Mantsos (on camel) is chairman and managing director of Olympic Holidays and pushing the company hard into private viewdata.

Texas lifts the veil on its strategy for the Eighties

by Chris Yonett

TEXAS INSTRUMENTS last week unveiled seven products as part of its strategy for the next five years with the promise of still more to come shortly. The products are: Three additions to the DS990 minicomputer range; a video terminal; a low-cost terminal; and two cartridge disc systems.

The disc drives come as part of the DS990 additions but are also available separately. The CD1400/32 has 32 M-bytes of storage, 16 fixed and 16 removable. The CD1400/96 has 96 M-bytes of store, 80 fixed and 16 removable.

Derek Walker, computer products marketing manager for TI's European digital systems division, said the new DS990/7, DS990/9 and DS990/29 minicomputer were compatible with the existing family and had 128 K-bytes of memory. They are all housed in a 60-inch equipment cabinet with space for future expansion.

All three provide intelligent error correction and can handle programs written in Cobol, Fortran 66, Fortran 78, Basic, Pascal and RPGII.

The DS990/7 is based on the 990/10 processor and CD1400/32 disc drive which are mounted in a pedestal cabinet which also provides space for optional chassis expension or diskette drives. It costs from £27,950.

The Model DS990/9 also uses the 990/10 processor with the 96 M-byte CD1400/96 disc drive and is seen as particularly suitable for integrated office systems. It is supplied with a TI 911 video terminal and costs £35,980.

The top of range model, DS990/29 is aimed at finance, insurance, rental, distributive processing and bureau applications, said Walker. It is based on the larger 990/12 processor with 256 K-bytes of cache memory and can handle up to 15 users, has 96 M-bytes of store on disc and two TI911 video terminals.

Copyright law plunged into confusion

by Claire Gooding

US LAW on software copyright protection was thrown into confusion last week when the Supreme Court ruled that the use of a computer program to improve an industrial process was patentable. The case concerned a rubber moulding process in which a real time computer system monitored the temperature.

The decision drastically alters the issue of software protection in the US, and is likely to re-open arguments in favour of this form of protection elsewhere. But it did not pass without opposition.

Justice John Paul Stevens, who wrote a 27-page dissent on the ruling, objected that the computerised process does not add anything new to the original industrial formula, but rather provides a more reliable technique of measuring the temperature inside the mould.

Other judges joined Justice Stevens in claiming that the majority decision had misunderstood the applicant's claimed invention. They predicted that the ruling would aggravate confusion among patent lawyers.

"The lawyers will not be able to tell which computer-related inventions were patentable and which were not," Justice Stevens predicted.

The rubber case had reached the Supreme Court after an appeal on an adverse decision by the Court of Customs and Patent Appeals.

The case hung on the mathematical formula used to define the heat-control which was critical to the rubber moulding process. Justice William Rehnquist concluded for the majority opinion that the patent applied for was an attempt to protect a manufacturing process, and not a mathematical formula.

This overruled former decisions in 1973 and 1978 that such formulae used in programming were laws of nature, and unpatentable. The US Patent and Trade Mark Office has long opposed the patenting of programs. It currently has 3,000 applications for patents involving computer/software techniques.

The decision was welcomed by companies which have invested in developing computerised techniques. It is hoped that this form of protection will accelerate and stimulate an already fast-growing technology.

'The value of a patent can spell the difference between life and death for small software companies," said one lawyer.

There are adherents to the idea of patenting software in the UK, although it is not seen as a likely alternative to copyright.

● Software piracy conference. Report pages 8/9.

Court order on Telecomputing's US supplier

by Keith Jones

TELECOMPUTING [illegible] has won the latest ro[illegible] tussle with ECS Microsystems [illegible] California. This is the firm that supplies the hardware for the Oxford company's TECS 4500 microcomputer and which resorted to drastic legal action two weeks ago with the stated intention of recovering $450,000 owing by Telecomputing on equipment alleged to be faulty.

ECS Microsystems has been ordered [illegible] Court to provide [illegible] security for costs [illegible] result of its access [illegible] raids by its solicitors [illegible] Markby, on Telecomputing offices and the temporary freezing of Telecomputing assets.

Telecomputing was prevented as a result from carrying through its plan to take a 50% share in ECS Microsystems by buying the 900,000 shares held in the California firm by Michael Roberts.

Roberts founded ECS in Australia and ran it until last year when its main activities were transferred to California and US financial interests took control.

ECS activities in Australia now comprise an operation called ECS Australia which is a subsidiary of ECS Microsystems and which assembles and markets kit shipped in from California.

The US shareholders in ECS Microsystems now want to sell financially troubled ECS Australia to Roberts whose main source of funds is the 900,000 shares, held through ECS Holdings.

But ECS Microsystems in California said that it wanted cash from Roberts rather than a share swap.

Meanwhile Telecomputing is pursuing its action filed against ECS Microsystems in California on February 20 before the UK raids. It charges ECS with supplying faulty equipment and appointing other European distributors.

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Bid to beat US and become biggest maker of personal systems

Sinclair aims to clean up with a £70 microcomputer

by Brandon Gamester

WITH the launch last week of a new £70 microcomputer, the innovative Cambridge company, Sinclair Research plans shortly to overtake Radio Shack and Apple to become the world's leading manufacturer, in terms of unit sales, of personal computers.

Sinclair's first computer, the £99 ZX80 is currently said to be outselling all other personal computers put together in the UK, and its successor the ZX81 will start to be manufactured at the same rate, 10,000 units a month.

It will be produced at Timex's factory in Dundee, which is also producing the recently announced flat-screen TV. Manufacture of the ZX80 will probably cease in four to five months, says company managing director Clive Sinclair.

Despite the reduction in price, the ZX81 incorporates significant improvements over the Z80. It has an 8K ROM Basic Interpreter, the chip first announced last September (and subsequently withdrawn) to upgrade the ZX80 which has only a 4K ROM. This enables the ZX81 (and converted ZX80) to work in floating point arithmetic to a 9-digit accuracy. It also makes possible log and trig functions and their inverses.

The ROM also extends and improves on the graphics facilities of the ZX80, and adds 37 additional functions to the keyboard (a new keyboard template has to be overlaid on a converted ZX80).

The 40-key touch sensitive keyboard on ZX81 now gives the equivalent of 91 keys, each key representing both alphanumeric characters and "single-press" Basic commands. In graphics mode an additional 20 graphical and 54 inverse video characters can be entered directly from the keyboard. The graphics display can also be divided into 64×44 blocks, each of which may be "blacked" in or "whited" out under program control.

Another new feature is the ability to operate in "fast" and "slow" modes. Fast is said by Sinclair to be roughly equivalent to the speed of operation of other popular personal computers, whereas slow is quarter this speed and enables the ZX81 to compute and display simultaneously. This allows continuously moving animated displays without the flicker which dogged the ZX80.

Clive Sinclair, aiming to dominate the world market in personal computers.

One of the keys to the low price of the ZX81 (besides the dependence on high volume sales) is the use of a new custom-built chip, being manufactured in the UK by Ferranti, which replaces 18 chips in the old ZX80. This brings the total number of chips in the ZX81 down from 22 to four, as opposed to as many as 50 in many other personal computers. The microprocessor in the new computer is the Z80A as before.

Sinclair plans to continue to sell mainly through mail order. The computer, a 200-page instruction manual that includes a course in Basic programming, and a mains adaptor will cost £69.95. In kit form with the manual it will sell for £49.95. Also available is the £50 16K-byte RAM pack, which has been available for the ZX80 to supplement the internal 1K-byte RAM.

Besides the interfaces for a cassette player and a conventional television set (to act as VDU), the ZX81 can be plugged into a printer.

Sinclair will start marketing its own 32-column printer in June, a highly compact £50 machine designed for use with the ZX81 and upgraded ZX80. A copy command on the keyboard will set the printer to reproduce exactly what is on the TV screen within 12 seconds.

A number of cassette programs are also being sold by Sinclair at £3.95 each: a "games" cassette which operates with the 1K RAM, and three others which require the additional 16K RAM.

Questioned on the reasons why his company did not win the contract for the supply of microcomputers for the forthcoming BBC educational microcomputer series, Sinclair commented, "Why the BBC has acted as it has is beyond us ... we offered a machine that would do everything that the Acorn Atom can at a price of £110." The modified Acorn Atom which will be sold side by side with the series is expected to sell at just over £200.

Sinclair added that he was most deeply disturbed by the possibility of the BBC using some archaic form of Basic.

The six-inch square ZX81 incorporates a new custom chip which replaces 18 from the ZX80. On the right is the £50 printer which will be available in June.

AT&T is keen to settle in anti-trust case

by Donald Kennett

THE US Justice Department last week began presenting its evidence to the Federal Court in Washington for its long-awaited anti-trust case against US telephone giant, AT&T, alleging that AT&T has unfairly monopolised the telecommunications business.

The case has been postponed from January when both sides said they had come up with a framework for an out-of-court settlement.

It was resumed last week when the deadline passed without a "consent decree" being submitted to the court. Attorneys for the two parties are now expected to take up to a year each to present their evidence, unless settlement negotiations succeed in the meantime.

Talks were broken off last week when the Attorney General from the Carter Administration finally handed over to his successor in the Reagan Administration.

The new man was once an officer of AT&T, so he is refusing to be involved in the case. The Assistant Attorney General also wishes to avoid the accusation of bias because of some pensions work he did for AT&T. The third possibility is the man who is expected to become head of the anti-trust division of the Justice Department, Stanford University law professor William Baxter, but his appointment has yet to be approved by the Senate.

Any settlement reached is thought likely to involve the splitting up of AT&T into separate operating companies, but the full extent to which this would be required is not known. AT&T says it is keen to negotiate a settlement, because the case will cause difficulties in running its business.

The company is already busy restructuring itself to conform by March next year with the recommendations of the Federal Communications Commission that AT&T should form separate subsidiaries for competitive activities. This includes the supply of terminal equipment and the provision of "enhanced" data communications services – in which the information is changed in some way during transmission. The decision has yet to be confirmed by the courts after challenges from competitors.

But the FCC's decision does not go far enough for the Justice Department.

NCR makes £11m in UK...

NCR GROUP Ltd, the UK arm of the NCR Corp, pushed up profit and turnover in 1980, despite tough trading conditions.

Profit for 1980 was £11,718,000, against £9,185,000 in 1979, an improvement of £2,533,000. Turnover was 26% up, from £82,422,000 to £103,618,000.

The company exported £32,000,000 worth of equipment and services, slightly over 30% of gross sales.

Earnings were 96p per share. Retained profit, including the 1980 contribution, was £29,694,000 from which an interim dividend of £3,000,000 was paid.

Because of the company's status as a wholly owned subsidiary of NCR Corp, the share figures have little impact in the UK, other than to highlight the profits which can still be made.

In a footnote to the accounts the company shows how the application of current-cost accounting reduced the profit by a mere 2%. This is because technological change is pushing down the real cost of computing, so maintaining a price level just above inflation, after ancillary equipment costs are taken into account.

...as Burroughs drops £6m

BURROUGHS Machines Ltd, the UK subsidiary of troubled US giant Burroughs Corp, saw its profits in 1980 fall 22%, and a doubling of its tax bill. The 1979 profit of £26,424,000 was a near 80% rise on 1978, but proved unsustainable in the growing 1980 recession which saw profits of only £20,868,000. The tax bill in 1979 was £1,492,000, against £2,908,000 in 1980.

The company exported about 30% of its sales to bring a total of £51,000,000 of revenue to the UK. On the other hand, the company imported about £35,000,000 worth of equipment, leaving a net exported surplus of £16,000,000.

Burroughs made foreign exchange transaction gains of £1,552,276, because of the appreciation of sterling.

Rory Johnston talks to the new Minister who has personal experience of his responsibility for computers

Information Technology seen as salvation of industrial Britain

IT is dangerous to crusade too vigorously for action. Those whose ears you are bending are liable to turn around and say, "OK, you do it then."

That is exactly what happened to Tory MP Kenneth Baker and his campaign for a national strategy on Information Technology. But far from being daunted by the prospect of having to translate his words into deeds, Baker is tackling the job with a zeal that shows he sincerely believes this technology will be the salvation of industrial Britain.

Baker was appointed Minister of State for Industry under Sir Keith Joseph just nine weeks ago, overseeing not just computers and electronics but the whole of the private sector of UK industry.

A large part of his time is spent in the Information Technology job, fortunately for the industry, because unlike most Ministers he has experience of the subject matter.

It is clear that the initiative for his appointment came directly from the Prime Minister herself, and the significance of this for the industry is hard to overestimate.

It was Baker who succeeded in convincing Mrs Thatcher of the vital importance of new technology for the future of the economy. It was he who got her to spend an entire morning last spring visiting systems houses in London.

The Prime Minister's commitment to the industry, vital if Baker's programme is to succeed, is now clearly established.

Baker achieved this despite his earlier connections with Ted Heath and his general image as an interventionist, in contrast to Sir Keith Joseph's free trade leanings.

Does this indicate a change of tack on the part of the government? Without giving a blunt answer, Baker replies that in the Information Technology industry there is "a natural interface between the public and private sectors."

He goes on to explain that in this particular rapidly-changing field there is room for "intelligent intervention on a modest scale," to make sure the UK does not fall behind in Information Technology.

"The State has a clear role to play here," he asserts.

As an example he points to Inmos, without which, he says, the UK would not have had a capacity in chip manufacture. "This was an omission on British industry's part," he says.

> **If there is no effect, the politicians only have themselves to blame – fate overtakes people because they do nothing.**

The project was "a good use of start-up money," Baker feels, and following a successful meeting with executive director Iann Barron the two are happy that no further State funds will be needed, and that outside partners will be found.

Baker is also happy with the role of another of Labour's creations, the National Enterprise Board. There is a serious gap in the market for providing venture funds, and the evolving (indeed, converging) roles of the NEB and the NRDC are important for filling the gap, Baker says.

Baker sees his own role as a dual one: missionary and salesman. A great deal of convincing needs to be done both inside government and outside in industry, commerce and education. Through the Cabinet Office Committee on Information Technology, Baker is acting as a link-man on government IT activity in such disparate areas as the Home Office, the Civil Service Department, and the Department of Education and Science.

"I have to enthuse them and act as a catalyst," he says, to get the new technology more broadly accepted in government operations and in what government brings about in the outside world.

As a start, he ordered a word processor (the first in the DoI) almost before he had done anything else on taking office. Now an Office of the Future is being planned for the Department, due for start-up in the summer, initially based on typing pools but later on providing communications between regional centres and London HQ.

Eight firms have been asked to make proposals for this "showpiece" system.

As a salesman for British products, Baker will be going to the US next month, and also to Japan for more general talks on "exchange of technology". Co-operation over the development of fifth-generation mainframes will be one of the topics to be raised with the Japanese Ministry of International Trade and Industry, and Baker wants to start regular meetings between British Telecom and the Japanese PTT on "areas of mutuality of interest".

Crusader for Information Technology Kenneth Baker is now looking to industry and the public for initiatives to further the cause: "I want ideas," he says.

The Minister will also be seeing Fujitsu and Hitachi, companies whose achievements have "immensely impressed" him.

Baker has not yet succeeded in squeezing any more money for IT out of the public purse over and above existing programmes such as MAP and the Product Development Grants scheme. It could be forthcoming if the right ideas came along, he says. "I want more ideas," he emphasises, making it clear he expects these to come from the great inventive British public.

How capable is the DoI of judging these ideas and picking the winners, rather than picking the losers and throwing the winners in the wastebasket?

Are grants allocated on the Old Boy network and according to Who You Know?

Baker is complimentary towards the technical people in the Department; "We have very high calibre people here," he says, and points out that of the large number of proposals he was sent on taking office, only one was from a firm with which officials were not familiar.

Robotics in the UK is one field for which Baker expresses particular concern. "We are well behind Europe and I want to beef it up," he says.

As part of his fact-finding activities Baker now visits companies at a rate of about one a week. There are still plenty of people he has not yet seen, including UKITO, the "buy British computers" lobby, its European counterpart the IIIA, and the European Commission.

The Mackintosh report to the EEC, proposing substantial aid for the European peripherals industry, has not yet come under his gaze, but he does comment that the UK peripherals business is in reasonably good shape.

On the thorny issue of preferential treatment for local firms, Baker comments, "We buy British whenever we can." He adds, "... can't deny development grants to foreign-owned firms, and ... discrimination should ... great."

Wrapping up the whole ... in the style necessarily acquired ... all Ministers, he says with ... "We will follow a Best ... practice."

> **It's not what the government is going to do, it's what industry is going to do.**

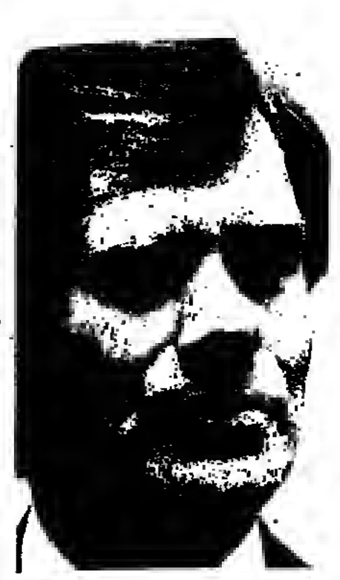
Baker believes passionately ... it is to Information T... that we must look to find the ... to replace those in our dying ... dustries.

But what does ... which to compete against the ... of the world? "A great deal of ... inventiveness," he replies ... The good thing about this technology is that development of ... products is highly expensive ... requires a great deal of skill, ... low-labour-cost countries ... be able to overtake us in that ... he believes.

Does he think that a political ... efforts really have much effect ... the way nations and economies ... "If there is no effect the politicians only have themselves to blame ... fate overtakes people because ... do nothing," he asserts.

Baker is due to make ... policy speech in about ... weeks' time to give the ... ment's view of the whole ... on being pressed about ... ing government action, ... eventually turns the ... around and exclaims, ... what the government is going to do; it's what industry is going to do!"

Even the most ... tionist would agree that in the ... it is the efforts of the ... working people that create ... wealth we hope to acquire ... not too distant future.



Newman

Davies

Network products from new company

by Donald Kennett

A SPECIALIST networking company was launched last week by Information Technology Limited, to complement the activities of its computer manufacturing and office systems subsidiaries CTL and OTL.

The new company, Network Technology Ltd, aims to supply a range of digital networking and interfacing products designed to help companies make the best use of their communications links.

Managing director John Newman said that the first products to be sold would include the Terpac range of protocol converters made by Sit-Intel in France for use on the Transpac and Euronet packet networks, and the SM9200 range of switching multiplexers made by Digital Communications Corp in the US.

Later products would include a telex message switch, ring and Ethernet-like local area networks and private X25 networks, Newman said.

Backed by CTL's 15-depot service network, NTL will initially be headquartered in ITL's offices in Winchester. It is aiming to reach £1 million turnover in its first year.

Managing director John Newman and product marketing manager Dick Williams joined NTL from Kode, where they were group executive and data communications product planning specialist respectively. Sales manager David Bull has joined from Nexos, where he was sales manager for facsimile products.

NTL chairman Tony Davies, who is also chief executive of the holding company ITL, said the company was unlikely to manufacture – at least for the first five or six years – because the problem in the industry was to get volumes up and prices down, not to duplicate manufacturing effort.

ICL could make profit by 1982, says report

by Kevin Cahill

A STOCKBROKER'S analysis of ICL's financial position has concluded that the company is on the way to a pre-tax loss of some £28 million this year, but that this could be reversed to an £8 million pre-tax profit for 1982. The profit turnround is based on a 10% increase in sales and a recovery in the gross profit margin on manufacturing.

The analysis, by Aziz Panni of Henderson Crosthwaite, concludes that the company is a "viable investment in the medium term" provided the prospects of government support materialise. But it echoes ICL's chairman Philip Chappell's comment that the company's most serious problem is the outflow of cash. This was put at £68 million in last year's accounts and is set at around £74 million by Panni in his report.

ICL had no comment to make on the report.

Panni states that savings of £20 million in employee costs might be made this year but that even containing costs during 1982 will not significantly affect profitability.

Panni is confident there are no worries over possible leasing losses at ICL, an element which causes City nerves following the collapse of Itel. The report points out that possible re-purchases are well covered by provisions in the 1980 accounts.

ICL's commitment is to buy back equipment at net written down value. In 1979, for which the company made a provision of £7.8 million to give a total year-end provision of £21.4 million, re-purchases amounted to £9.6 million.

In 1980 provision of £19.1 million gives a year end accumulation of £29.5 million, against actual re-purchases in that year of £11 million.

The report concludes that "ICL's trading target of breaking even in the second half of the year looks reasonably achievable" but that "the logic suggests ICL must attempt a major rights issue".

£100-a-day cash dispenser

by Keith Jones

BALANCE inquiries, account transfers, standing order payments, Access card withdrawals and payments, money deposits and cash withdrawals of up to £100 a day are some of the customer requirements that will be able to be met by the Cashline cash dispenser service being introduced by Williams and Glyn's bank.

Already a major IBM user, the bank decided to go to IBM instead of its existing cash dispenser supplier, Chubb, for the Cashline machines. The 120 existing Chubb units operate only in offline mode and are limited to issuing £20 when fed with a pre-printed card.

Williams and Glyn's is replacing the ageing Chubb units with 150 IBM 3624 dispensers over the next three years, and they will all operate online to the bank's computer centre at Lombard Street in the City of London where mainframe kit includes one 3031 AP (attached processor) and one 370/158 AP each with six megabytes of main memory.

The bank's choice of IBM 3624 units was much less of a rejection of competing dispenser models than a move towards even greater standardisation of IBM kit. The back offices of the bank's branches are to be equipped with IBM 3619 and 3604 terminal equipment as replacements for IBM 3980s.

£1 million City backing for Scottish viewdata adapter

By Donald Kennett

FUNDING to the tune of £1 million has been put behind production of a £165 viewdata adapter, to be the cheapest so far.

Ayr Viewdata's P1 adapter is being backed by a group of eight unnamed City institutions lined up by Sandy Gilmore of stockbroker Carr Sebag.

Only 100 units are to be made this month by subcontractor G. R. International of Perth, but Ayr's managing director Harry Thomas said he planned a gradual build-up to 6,000 units a month by the end of the year, with the company's own production starting around September.

Thomas expects sales to reach £4 million by next March with exports playing an important part. "We have already demonstrated a teletext unit for Scandinavia and a Prestel adapter for the US which are different from the UK products," he said, "and we're working on a teletext adapter for the US which should be ready in three months."

The UK teletext unit, called T1, is to be produced from September at the same price as the P1. Both will be available at £112.20 in quantities over 5,000. "The market is so huge internationally," said Thomas, "it can sustain a company just producing these two products in increasing volume for 10 years at least."

The City investors have taken a 26½% stake in the company, the rest of the shares being held by Thomas himself (63%) and the three new directors appointed last month: chairman Robert Keen, who comes from bankers Hill Samuel; production director and buyer John Dean, ex-Plessey and other electronics companies; and non-executive director John Edkins, a partner in a firm of accountants.

Sam Fedida, the inventor of viewdata, and Peter Kidd, formerly with television maker Murphy, have been retained as consultants on three-year contracts.

Other staff are to be hired when the factory starts up, in numbers that depend on the eventual level of automation. The team is currently looking at automatic assembly and test equipment.

The viewdata adapter is based on the General Instruments chip set and the teletext adapter on Mullard chips.

They both use infra-red-based remote control keypads (which are not compatible with each other), but apart from that they have no frills such as printer, cassette or microcomputer interfaces – to keep them as cheap as possible. "But if someone wanted to order 20,000 units with interfaces we'd do it," said Thomas.

The first public demonstration of the adapter was at Viewdata 80.

European flexible leasing operators hit back at critics

by Keith Jones

RECENT Press comment to the effect that the European Computer Lessors and Traders Association, Eclat, was not doing enough to control malpractice in so-called "flexible" leasing has led to a strong reaction from the association, which is made up of 28 operating lessors from all over Europe.

Eclat held a Press conference in London last week to clarify its position on operating leases that offer flexible terms to computer lessees. Eclat pointed out that the whole attraction of an operating lease was its flexibility, the fact that the customer could lease a machine for a significantly shorter period than a finance lease, say five years instead of seven, and pay much less than the full cost of the machine over the lease period.

But abuses could occur, according to Eclat, with some of the flexible leases that offered the customer the opportunity to change his machine after, say, three years, for a more up-to-date model provided that the new lease was written with the same lessor.

In a few instances, commercial risks have been transferred to unknown parties in the lease contract, according to Eclat, which listed three resulting abuses. They were misrepresentation of the full term of the lessee's financial obligations, creation of two differing sets of documents for separate presentation to the lessor's source of funds and failure to identify clearly the party at risk, should the lessee exercise any of his options in the lease.

Eclat president Rene Aubron, of Promodata, Paris, said that the association was strongly in favour of the option of flexibility being available, and he knew of no firm within Eclat that had committed any of these abuses. But he pointed out that there were at least 100 other operating lessors in Europe, many of them very small.

One big UK operating lessor that does not belong to Eclat is Atlantic Leasing, well known for its Flexilease contracts.

Atlantic boss John Foulston, pointed out that flexible leases were often no more expensive than other operating leases, even though they usually covered a longer period, because the monthly repayments were lower.

He admitted that the customer would be in a bad position if his data processing workload was shrinking, because the value of the second lease had to be at least as big as the first, for tax reasons.

But Foulston agreed with guidelines outlined by Eclat that its members should represent fully the terms of the lease to the lessee and to the lessor's source of funds, and that every member should ensure that the lessee and the source of funds were aware of the lessee's full period of financial obligation.

Foulston commented that every Eclat member should also have to say that he intended to honour these commitments.

Eclat said that it knew of only one case in Europe of a customer being harmed by a "flexible" lease. The lessee, who was not in the UK, thought he could change his machine after three or five years, but was now stuck with it for 6½ years because the lessor had dropped out of the market.

Foulston said that he knew of three big computer users in this country who had been persuaded to lease machines on what appeared to be very flexible terms, who were now having to pay a full term's rental charges to the banks that financed the leases because the lessor had disappeared.

He estimated the people behind the lessor company concerned got away with £400,000. Worries about such companies led to an article last November 12 in the Law Society Gazette, reported in Computer Weekly, that warned about suspect flexible lease deals.

Foulston said that Eclat had "clarified" its position on flexible leasing because many of its members offered flexible lease deals, often involving a high risk to the lessor, and they were losing business as a result of the bad publicity about flexible leases.

Parry Mitchell, chairman of United Leasing and one of the most vocal opponents of flexible leases, refused to comment on the Eclat statements. He was not present at the Press conference.

RTZ calls for UK software awards

by Claire Gooding

THE accounting package Fascia, sold by RTZ Computer Services, has broken the £1 million barrier with a sale to Rolls-Royce Aero Division.

Fascia, which has been the subject of a worldwide sales push by RTZ, sells for about £10,000 and its wide-ranging success has prompted RTZ to propose that there be some sort of recognition for the British market such as ICP's Million Dollar Awards ceremony.

"We have suggested to ICP that they set up a British equivalent to the Million Dollar Award based on sales of a million pounds or more," said RTZ director Paul Methven. So far ICP has dealt exclusively with the US market, although British firms have won recognition for their best-selling products in the past.

This year, however, ICP, a US publishing and survey firm is to hold a London-based awards and conference session at the Savoy Hotel on May 12 as a follow-up to the tenth Million Dollar Award Ceremony in San Antonio in April.

The London conference will focus on international software marketing.

The award ceremony is a prize-giving platform for the US and international software industry. Awards are given on the grounds of product performance and earnings. Among the successful British entries last year were Telecomputing, Safe Computing and MicroFocus with CIS Cobol.

The list of winners can be a useful guide to the fortunes of the market. Entry forms are available from ICP at 2 Dennery Street, Park Lane, London.

It's the Hallmark of success

SOFTWARE specialist Hallmark Associates has recently won two orders for its ManuMark stock and production control package. One of the packages, worth £30,000, is being exported to Le Bozec et Gautier in France. The other order has the same value and is from the British Sugar Corp. for use on an IBM 4341. Hallmark Associates (Computer Services) Ltd has no connection with Hallmark Business Systems, which recently went into receivership.

BUTCHER . . . *Some unions only pay lip service to progress*

'Luddite' unions holding up new technology—MP

COVENTRY MP John Butcher warned that unions such as Natgo, Nupe and Apex might be putting the brakes on the development of technology, an area vital to Britain's future prosperity.

Speaking to an audience of software writers, dealers and users at the Gower software protection conference last week, he suggested that some unions paid lip service to the progress of technology but in reality took a Luddite attitude, as shown by Clive Jenkins' ASTMS white-collar campaign against "job-snatching" micros.

"If the unions push such views as 'Jill mustn't sit in front of a screen for more than an hour at a time', we may not get the benefit of products which could give us increased efficiency."

Butcher said that Britain should be "shouting as loud as we can" about existing bureaux and software houses, and putting public money into the private sector.

"Government should trust the industry and make better use of it," he said, saying that massive areas of central government could benefit from computerisation.

Methodology study

DIVERSE information systems design techniques within the DP community have caused an IFIP (International Federation for Information Processing) working group to conduct a comparative study of methodologies.

Groups or individuals who have developed information systems design methodologies are invited to submit specifications for a standard test case. The federation hopes to select several of the methodologies for presentation at an IFIP sponsored conference in May 1982.

Details of the standard test case and the requirements for submission can be obtained from H. G. Sol, CRIS Conference Secretariat, Information Systems Research Group, University of Groningen, PO Box 800, 9700 AV Groningen, Netherlands.

Power to the end user

PROPHET and pundit of the software industry James Martin, best known for his database expertise, is now making his views known on the trend towards giving more power to the end user.

His report Application Development Without Programmers (published by Savant Research Studies of Carnforth, Lancs) examines the reasons for the change of emphasis and status quo in the DP industry.

Martin examines the need for "fundamentally new methods of application development" looking at such factors as who the new users are likely to be, and what they will expect from a self-service system. He also looks at the implications the methods have for software firms and programmers themselves.

SOFTWARE FILE–1

Two-page report from the Gower software protection conference, held last week, entitled Killing the Pirates

Feelings run high on the pros and cons of protection

OPINION was sharply split among speakers and delegates. Some were concerned about providing some sort of physical protection to forestall thieves; others felt that such methods could only be short-lived and in the long term were against the interests of the industry.

"I don't think that there's anything we've heard of today that would seriously deter a determined 15-year-old, given an hour or so to crack it," said chairman Peter Laurie, editor of Practical Computing.

Others were against the idea of physical protection because they felt that on principle, software should be easily usable and portable, both aspects affected by attempts to stop copying facilities. The feeling among users was that to stop the physical copying itself, as some devices aim to do, was throwing the baby out with the bathwater.

Ian Litterick, who is both a user and a writer of software, suggested that there were justifiable reasons for occasionally breaking the rules, and Mike Gurr put the cat among the pigeons by suggesting that a lot of software didn't deserve protection however many man-years of development it had taken, because much of it merely re-invented the wheel.

Software copyright expert Alistair Kelman was firmly on the side of any device that would protect owners' rights, be it a physical deterrent or a strong licensing agreement. The most important thing, he stressed, was to plan for piracy and have contingencies built into all marketing agreements or sales strategies.

Litterick . . . "I'm a software thief – who isn't?"

Why pirates now outnumber legitimate users

A LAST-MINUTE speaker at the conference was Ian Litterick who bravely titled his talk Why I'm a Software Thief. Three hands went up when he asked the audience of 60 "Who isn't?"

Later he told Computer Weekly that he was surprised there were so many who hadn't found it necessary to break the rules in some way.

Litterick dealt with the subject of illicit copying, rather than piratic bootlegging where someone sells for profit a product on which royalties should be paid to the author or owner. Copying is still a cause for concern, as for every copy borrowed or made for a friend, the owner loses a sale.

This, Litterick implied, might be the suppliers own fault, brought about by overpricing and lack of support.

Litterick argued in defence of a user's right to copy a package under certain circumstances. He is a user and an author of software products, and carried out the national Microsystems Centre feasibility study for the NCC and DoI, and he gave three justifications for software felony.

He put the blame firmly on the software industry itself, for not providing reasonable documentation and evaluation. "Sometimes one finds useless software on sale – I want to be able to evaluate a package before I buy it," he said.

He also hit out at the "rip-off price for documentation" which was the only way of properly evaluating a package without hands-on testing. Articles in computer journals didn't give him the details he needed when it came to judging the quality of software, he said, and borrowing a copy was often the only way of testing it.

"Having tested it, I maintain that if it's a good package there are good reasons why I should go on to buying it myself," he told the audience. Support and maintenance, as well as updates to the software, were the main factors in favour of purchase rather than "borrowing".

Licensing, a method most strongly recommended by many who joined the debate, also came in for some flak from Litterick. "I need a backup for my system. It's only sensible to copy the data used with an application on the same disc, to save swapping discs all the time. There are some software licences which limit copying. Licences which ask me not to make backup copies are devalued by the fact that I'm going to have to break them anyway."

He felt that licences would allow a user to legitimately use the same piece of software on two separate machines. "Suppliers shouldn't ask the full price for the second sale when the system is only going on to one disc, and effectively only being used on one system." Although some companies do take this into consideration, this argument won some sympathy, especially from one delegate who had paid full price for backup copies.

Litterick's third target, offered as an excuse for some of the illicit copying that goes on, was the marketing methods, or lack of them, used by some suppliers.

"It will always be quicker and easier to borrow a copy from a friend. Keeping people hanging around and not answering correspondence isn't the answer to the problem." Too often, he said, on registered as a user and from then on received no support and no response to inquiries or complaints. Indeed, there seemed to be few advantages to being a legal purchaser rather than an illicit copier.

He called on software suppliers to offer effective support as a disincentive to illicit copying, and drop the price of software so that buying a package became preferable to stealing it. "A cheap mass market software package should sell for little more than the cost of copying it. And I'm not suggesting that support comes free – manufacturers should unbundle support and charge for it. I would pay for a newsletter of updates gladly, as a user," he said.

"In the long term, restrictions on copying are a short-sighted solution. People will buy the best and the most convenient, and the economy of the marketplace will make such restrictions a short-term answer."

If Litterick's prescription gave the best of all possible worlds to the user, it would probably mean the end of "cottage industry" programming, the one-man-and-a-dog outfit which comes up with a brilliant idea but does not have the means or knowledge to market it effectively.

This, suggested Litterick, would not be such a bad thing: the industry might develop in parallel with the publishing world "where an author doesn't publish his own books – he goes to a publisher for the backing and the hype. It's cheaper to buy a well-produced book and more convenient than illegally photocopying each page. Why shouldn't it be the same in the software industry?"

From the people who brought you Wordcraft

DONGLE: a new word has entered the English language, brightening up the issue of software protection. Since readers of Software File are likely to encounter it again, here is a definition from Paul Handover, co-inventor of the device and its name, of Dataview in Colchester.

"A dongle is a small device attached to the hardware, which interfaces uniquely with each authorised copy of the software, without which the package will not function."

Dataview markets the successful Wordcraft, a word processing package for the Commodore Pet, which Handover believes to be the leading export earner for UK microsoftware package sales.

"The company was aware that it might lose sales through copying, and discussions between the writers of Wordcraft, and various people concerned with its maintenance and support, resulted in the dongle. Dataview's dongle consists of a small black cube which the operator can connect when using Wordcraft and remove when finished. Each package has its own dongle, so as copies cannot function without it they become impracticable on its removal.

"There were other circumstances at the time we introduced the dongle," Handover told Computer Weekly, "such as the launch of the 80-column screen for the Pet, and certain enhancements to the package itself. But sales certainly leapt overnight."

With that in mind, perhaps dongling will become a popular solution to illicit copying.

SOFTWARE FILE–2

by Claire Gooding

Users get free copies from careless dealers

ONE of the delegates at the software protection conference has some interesting suggestions as to the way in which many of the "leaks" occurred.

Nick Horgan of Circle Software pinned much of the blame on dealers, saying that often a demonstration copy would find its way into a user's premises and would stay there, in use and unpurchased because the dealer or salesman could not be bothered to collect it.

He had also had the experience of finding obvious copies "hanging on the wall in a shop". Having been tipped off by someone, he investigated and then confronted the dealer with his suspicions. "They were most apologetic and offered to pay for those in the shop, and of course they'd been done by a programmer who'd since left, the usual story."

The other main problem he had found was the swapping and "borrowing" of packages purchased by one company and then passed on to colleagues or other departments.

To find more evidence of the problem, Computer Weekly asked the opinions of people on both sides of the user/supplier fence.

Predictably, most user groups see themselves as existing for the benefit of suppliers, who canvass users for suggestions on improvements to packages, as well as for the laudable aim of user education and sharing of knowledge.

The general opinion seemed to be that "copying does go on, but it's between individuals, usually friends, and by no means endorsed." One spokesman for the CP/M user group said "Microsoft's Basic is a prime victim. As for TRS80 software, if what I've heard said is true, then it's a wonder there's any market for it at all, given the speed at which programs whip round between users."

Paul Handover of Dataview, whose suspicion that 25% of Wordcraft sales were lost through copying led to the invention of the dongle, told us: "Most dealers know that if you sell unprotected software to a large group of users it quickly gets passed aroung from department to department. They seem to think they have a right to copy it."

"It's not uncommon for our engineers to come across black market copies. Last Friday an engineer was called out to a firm in Cambridge only to find that the cause of the fault was an illegal copy of the Programmer's Toolkit."

The Toolkit was recently the subject of another case concerning alleged piracy. "The client was embarrassed at being caught out, but there was nothing we could do about it, or about the waste of four hours of our engineer's time," said Handover. "Catching them is only half the story.

"The law had to establish a better definition of copyright. Until the government assists the market with protective legislation we can't do anything even if we catch them. And who are we to spend thousands on creating a legal precedent?"

Deterrents

BESIDES the unattractive solutions of induced dependence, booby trapping and harassment, there were other means for a victim to protect his interests, said Julian Allason. They included lawsuits, embarrassment of offenders through word of mouth and press campaigns, and legal harassment, not, he stressed, the knee-capping methods rumoured to have been used in the US.

Even better, he suggested, were positive measures such as superb documentation, printed in colours which would resist photocopying.

Law is safety net

CHAIRMAN Peter Laurie, who as editor of Practical Computing has long called for a clear law on software copright, suggested that at the moment contracts with named users, and coding their names into the program, provided some sort of protection in that guilt of piracy can be proved. But the law is still sorely needed as a safety net.

"It's all very well," observed one delegate, "as long as having caught a pirate, one could be sure that the courts would recognise his act as a breach of copyright."

Allason (right) . . . "If I was starting now, I'm almost sure that . . . I'd decide to be a pirate." Peter Laurie looks on.

Illicit cassette trade

From front page

ger at dealers who buy licences from companies which have no right to sell, making an almost impenetrable legal tangle.

"Another industry favourite is the sale of cut-price software through hardware engineers. The chap turns up to look at the disc drives and mentions that he just happens to be the agent for a special offer, 90% off, cash-sales-only package.

"We mentioned this to one company concerning one of their engineers and the only reaction we got was: 'Thank God it wasn't one of our packages!' I think the engineer involved is still working for them."

Given the dwindling market for micro packages and the data, possibly underestimated, collected on piracy, "it is not unreasonable to connect the two," said Allason.

Moving from piracy to illicit copying, he homed in on user groups who often band together, and pool resources to buy a particular package which is then circulated. "It's also endemic in education," said Allason. "It's not unheard of to have routinely organised copying. Packages are bought and then circulated".

Sometimes, he suggested, user groups indulged in busting protection for the sake of it. Recently one user magazine actually published the key to the 100,000 seller, Microchess.

Whereas this sort of illicit copying used to represent 99% of the problem, Allason said, the emphasis was about to change and the number of true piracy cases was getting larger.

One software dealer's list had dwindled from 200 products to 12 in a couple of years because "on purely commercial terms it was only worth their while to sell the packages with really good protection."

The final sufferers, he said, were the users who found that programs they wanted had been withdrawn because they could no longer pay for their place in the catalogue. Suppliers were becoming loth to publish and promote – although there were ways of preventing the copying of documentation, such things were expensive. Overpricing, lack of support, and reluctance to invest in development were likely to be the long-term effects.

"I BELIEVE that if a package is good enough to be pirated then the author should sell it at a price that makes it totally uneconomic (in real terms) to pirate it," said Mike Gurr, who spoke on some technical aspects of software protection.

Gurr brought the audience's attention to a piece of software called the Locksmith, sold in the US by Sensible Software, which promises to copy any Apple program, protected or not.

"It's a lethal piece of software," David Lowe told Computer Weekly. Lowe's company ACT Microsoft is presently involved in a case concerning alleged illegal copying of Visicalc.

'User groups are thieves' kitchens'

"WE must work for the elimination of these user groups," said software copyright expert Alistair Kelman. "Most of them are nothing but thieves' kitchens." He was alluding to the practice of some groups, of "sharing" software packages possessed by members.

He fiercely contested the view that such groups were a necessary protection for users against shoddy software. He said that he supported any means by which the legal owner could protect his investment in software.

Whereas the law on software copyright is indistinct at present, documentation in paper form is clearly copyrightable and can provide some protection from piracy.

He also found a flaw in Ian Litterick's argument that the industry would eventually parallel book publishing, with an author getting a software publisher to back his product.

"A well-known author can get an advance on his work. But if there's to be no form of protection, then investment in software development is money thrown away. Who would back a new product on those terms?"

Kelman sees the creation of the law on software copyright, on which Britain has no clear policy, as essential to the health of Britain's software industry. His own proposed Bill, which uses the term "transmutation" to clarify what and what is not illicit copying, is presently being looked at by Lord Lloyd of Kilgerran at the House of Lords.

While the Green Paper on the issue is now long overdue, Kelman does not want to see the UK rushing into legislation as the US recently did, with a bill which he considers "seriously damages American copyright law."

Recent efforts by the EEC to harmonise the law in Europe are going to run into trouble with 38 various national laws to contend with, observed Kelman, and the matter was becoming increasingly urgent as wideband communications, data highways and satellites developed the international software market.

Other solutions, such as patents, do not look as unlikely as they used to, and there has been a noticeable change in attitude in British courts dealing with the issue in the last six months.

French viewdata a threat to local Press

by Jack Gee

FRANCE'S provincial newspapers are anxiously awaiting the results of the first major test in French homes of the Teletel videotex system which they fear will toll the knell for their industry.

The experiment, scheduled for launching in 2,500 households at Velizy, a Paris suburb, in June, will provide users with entertainment programmes, news, weather reports and other information which make up the bread and butter of the local Press.

The provincial Press represents the most prosperous section of the French newspaper industry with daily sales of six million copies — three times as many as the Paris-based nationals.

François-Regis Hutin, owner of the top-selling daily Ouest-France, complains: "Teletex is a curious means of communication. It will isolate citizens more than ever."

Hutin is particularly sensitive to the entry of Teletex into the news business because France's electronic telephone directory, which will be consulted by subscribers from their own home terminals, is being launched in Brittany, the heart of Ouest-France's 700,000 circulation area.

Le Republicain Lorrain, which covers Eastern France with 200,000 copies a day, has scrapped a plan to transmit news bulletins on domestic TV screens.

The French Post Office Ministry's Directorate General for Telecommunications points out that France could acquire a technological lead in videotex which it would be foolish to relinquish to foreign competition.

The DGT forecasts a market of nine billion francs by 1985 for data communications, and Post Office Minister Pierre Ribes says: "Every day counts."

The French Press barons, however, fear that videotex will deprive them of vital display and classified advertising.

The Post Office has promised that the Velizy Teletel programmes will not include publicity. But Jean-François Lemoine managing director of the Bordeaux-based daily Sud - Ouest, replies: "The loss of only 10 or 15 per cent of advertising revenue could doom many provincial publications."

The Press owners are concerned that when local news, household hints and other practical information become available on screens in French homes, people will manage without their daily newspapers.

Sud-Ouest chief Lemoine recalls: "Newspapers are vital to the economic activity of any community. When we had a Press strike nine years ago, cinemas closed because customers could not obtain the programmes."

Matra, the French electronics firm which has recently taken over Hachette, the country's biggest publishing group, is planning a videotex experiment involving the Strasbourg daily Dernieres Nouvelles d'Alsace.

The company intends to use the Alsatian newspaper as a launching pad for local videotex projects and also, if France's state TV monopoly ends, for commercial television.

The newspaper owners express their annoyance with the government for failing to hold a parliamentary debate on the impact of data communications before embarking on the Velizy project.

Maurice Bujon, president of the French Press Federation and owner of the Montpellier-based daily Midi Libre, complains: "It is disgraceful that Parliament was not brought into this. Before dashing blindly into videotex, solid legal and ethical principles should have been established."

A Post Office Ministry official replies: "We know the provincial Press cannot create their own Maginot line to fight us. But if the government closed the door to data communications now, it would come in through the window within a few years marked . . . Made in Britain, Germany, the United States or Japan."

The belligerent mood of the Press owners was obvious during the recent debate in the National Assembly on the 1981 budget. The budget committee's president, Robert-Andre Vivien, said Parliament would block the Post Office appropriations unless the government made concessions to the provincial newspaper owners.

So Prime Minister Raymond Barre reluctantly agreed to set up a commission to supervise the Teletel and electronic phone book projects.

Card gives a lift to ski-ers

SNOW SPORTS lovers will be able to buy their ski lift trips "à la carte" next winter at French mountain resorts thanks to a credit card with a computer-read magnetic strip. The Ascot card, which is already being tested in Italy, is also being studied by resort operators in the US and Japan. Designed in co-operation with Jackie Pollaud-Dullaod of Les Arcs, a French Alpine ski centre, the card requires 12 seconds to scan and enables holidaymakers to choose between paying for an unlimited number of ski-lift trips or to set their own spending limit.

Skiers will be able to use the same card at a wide range of mountain centres in a given area, such as the Alps or Pyrenees, and it will also be accepted in restaurants.

Two of every three users give the thumbs-up to Transpac

by Donald Kenoett

TWO years after the opening of Transpac, the French public packet network, 67% of its users describe the service as satisfactory or excellent, according to a survey conducted by the French newspaper Zero Un Hebdo.

The service is similar to the planned British Telecom packet network, PSS, still on trial.

Covering 570 users, 21% of the total, the French survey found the greatest discontentment among users who accessed Transpac via the telephone network. The authors point out that this category is expected to account for the vast majority of future users, as electronic telephone directory and viewdata services catch on.

Transpac management puts the average of terminals per user at six, not counting dial-up terminals, but the survey figures which include dial-up terminals show eight per user.

Reasons for using Transpac include lower cost for the same speed of transmission, quoted by 84%, and ease of communicating with different sites, by 44%.

The majority of reported breaks in service lasted between ten and 30 minutes, but less frequent breaks lasted from less than one second to more than 24 hours.

The biggest groups of users transmitted more than a million characters a day (70%), over a distance between 200 and 500km (67%), at speeds of 4,800bps (34%) or 9,600bps (32%), to other sites in the same organisation (87%), at a cost of between 1,000 and 1,500 francs a month (57%) — about £100 to £150.

Of the 74% who switched to Transpac from another type of connection, 94% reported a saving in cost. Most user organisations had fewer than 1,000 employees (58%) and a turnover less than 100 million francs a year (35%).

Slowdown in France's services growth

by Jack Gee

FRANCE'S computer servicing and software firms showed a slackening rate of growth in 1980 with turnover up by an average of 21% compared with 27% in 1979.

Provisional figures released by the 11 leading firms indicate that the industry will eventually report a 1980 turnover of 8,200 million francs compared with 6,800 million francs for the previous 12 months.

The firms which have already produced figures represent 62% of the industry's volume turnover. They are considered sufficiently representative to produce an overall picture of performance by French computer service and software companies.

All the major shifts in industrial structure among these companies took place towards the end of 1980 and became official only at the beginning of this year.

The biggest developments in the industry were the acquisition of Socetam and of Sefco by Sligos giving it a strategic position in South-west France. CAP Gemini Sogeti bought DASD and its 500 staff, enabling it to begin operations in 30 towns across the US.

Services Informatiques which provided this information on computer service and software performance, gave these turnover figures for the industry's leaders (in millions of francs):

Company	1980 Turnover	1979 Turnover	% Increase
GSI	810	674	20.2
CISI	700	620	13
SG2	600	515	18.6
Cap Gemini	580	455	27.5
Sema	420	410	2.4
Thomson	504	380	40

NEWS BRIEF

Information link-up

THREE packages helping to make the Commodore Pet an effective business tool have been linked: Compsoft's Data Management System record keeping program. Information can be passed between Visicalc, Woodcraft and Wordpro using DMS, enabling selected searches and letters to be done automatically through a parameter list. Compsoft has also provided a Wordstar link for Digital Research's CP/M operating system users. DMS costs £1.. and the links cost £30 each.

Free offer

LOCAL businessmen are being invited to run their programs free at Birmingham-based consultants CBS, whose managing director, Andrew Reeve, said he wanted to show non-computer users how easy and efficient it was to use the Commodore Pet-based technology.

First sale

BRITISH Videotex and Teletext, the government-backed ... set up last month to tackle the ... market, has made its first sale ... the Chicago-based publishing, broadcasting and mail-order group Field Enterprises. Field plans a trial teletext service with 100 receivers on public places such as bars, airport lounges and bus depots.

Omninet debut

OMNINET is the communications part of a distributed processing system being launched in the UK by Omnidata, a Los Angeles-based microsystem maker set up in 1978 and 46 per cent-owned by Triumph-Adler. The network is a proprietary system able to link up to 255 terminals and other devices in the Omnidata range.

Privacy policy

THE government has decided not to sign the Council of Europe convention of data protection for the time being, Mrs Thatcher has announced in a written reply to a Parliamentary question. She added that a statement of the government's policy would be coming "shortly". Signing the convention would have to be ratified by UK legislation.

Interface

INDUSTRIAL applications for the Honeywell Level 6 minicomputer are now supported by a real-time interface called RTI-6, enabling a Level 6 to acquire and output a wide variety of analogue and digital signals. RTI-6 applications can run concurrently with other jobs under GCOS 6 Mod 400.

Taking off

SALES of IBM 4300 compatible processors by Magnuson Systems seem to be taking off in the UK after a slow start. The firm has chalked up at least four deals since the beginning of the year. Customers include Insurance brokers Stewart Wrightson of Kingston-upon-Thames, and the software products firm BPS Consultants of London.

Mark Potts, managing director of Rair, looks at Unix

Operating system bids for title of 16-bit standard of the future

IN A previous article I discussed CP/M, the operating system that has become the de facto operating system standard for 8-bit microcomputers and, by developments such as MP/M and CP/M-86, has been upgraded for multi-programming and the more powerful 16-bit microprocessor based hardware.

There is, however, an important multi-user operating system making a strong bid for the title of the operating system standard for 16-bit machines. This is the sophisticated, general purpose system Unix.

Unix, already into its seventh version, was originally devised by Bell Laboratories Inc in the US, to run on its own internal PDP-7 and PDP-9 systems. A further version was then developed for the PDP-11 series. The most significant feature of Unix is that it was originally written to make it highly transportable, allowing the implementation of Unix on a variety of different hardware systems.

This was accomplished by the parallel development by Bell Laboratories of a high level language which they christened "C". The C compiler generates a form of semi-compiled code, and to implement Unix on a new computer system, the developer only needs an appropriate code generator for the target instruction set, plus the writing of suitable device drivers.

Unix' worldwide distribution rights are handled by Western Electric, a co-owner of Bell Laboratories. In turn, Western Electric sells Unix licences to users and charges a royalty on all units sold by the licensee.

Compared with upgraded 8-bit systems, the investment required in Unix is quite considerable; a licence currently costs $50,000, and the licensee must also pay a royalty to Western Electric on a sliding scale starting at $750 per single user, single CPU.

It therefore appears that Unix will not become the established standard 16-bit operating system simply because of its low initial cost. So what is it offering that will tempt users away from CP/M?

Unix was developed right from the start as a multi-user system, rather than as an enhancement of a single-user system as was the case with MP/M. As Unix was developed in 1971 it already has some 10 years' multi-user operating experience; and by 1974, almost a year before CP/M was first introduced, it was already in use on about 600 PDP-11 installations.

Unix has a number of other major advantages. These include a high degree of portability — starting with DEC's PDP systems, Unix is now available to run on a variety of microprocessors including Intel 8086, Zilog Z8000 and Motorola 68000. This portability is a particularly strong feature, not found in 8-bit operating systems, which almost always run only on 8080 compatible microprocessors.

Secondly, it is a hierarchical file system incorporating demountable volumes. Special files constitute the most unusual feature of the Unix file system. Special files exist for each communication line, each disc, each tape drive, and for physical main memory. They are read and written in the same way as ordinary disc files, but a request to read or write results in activation of the associated device.

Thirdly, it has a tailor-made system language, C, selectable on a per-user basis. Unix is supplied with a Fortran 77 compiler written in C, and a number of esoteric languages such as Algol 68 and Snobol are also available. So far, there have been no significant implementations of Cobol or other common languages.

It is also interesting to note that although the commercial user pays a high price for Unix, it is virtually given away (at about $150) to educational establishments.

A number of companies have recently adopted Unix for their hardware. These include Onyx, which has implemented it for its Z8000 based system; and in the non-micro sector, Amdahl has recently bought a licence.

Certainly the most significant market development to date is the purchase of a Unix licence by Microsoft. It has started marketing Unix under its own name, Xenix, and aims to implement it for every popular 16-bit microprocessor. In order to achieve a rapid sales volume build-up, the company is reported to be prepared to sell Xenix at $200 to $300 per end user.

The entry of Microsoft into the market is important in that it has been the principal supplier of language compilers for 8-bit systems. It is therefore possible that the company will now remedy the present language deficiency and transfer the common languages up to Xenix compatibility. However, as Microsoft is already committed to the marketing of CP/M-86, we shall probably see the CP/M enhancement available somewhat earlier than Xenix.

Another development which may speed the progress of Unix towards its goal of becoming the 16-bit operating system standard is the emergence of several Unix compatible operating systems, developed by some hardware manufacturers and independent software houses. Whether these systems will prove sufficiently compatible to accept Unix-compatible languages and applications remains to be seen, but the inherent advantages of Unix as a powerful multi-program operating system are undeniable.

It is possible that we are now witnessing the birth of the 16-bit operating system standard of the future.

COMPUTER aided design company Calma has introduced this CAD/CAM system called Release 10 CARDS (Calma Automated Routing and Design System) for printed circuit boards. The system is claimed to be about 20% faster than earlier ones, having a screen resolution of 512 by 640 points and access to 4,096 different colours. Available for delivery in the second quarter of this year, Release 10 CARDS can cope with both single layer and multi-layer routeing right through to the PCB production. The system features a 300-megabyte disc store.

Sixth micro workshop

LIVERPOOL UNIVERSITY has issued a Call for Papers for its sixth annual Microprocessor Workshop on Micro Applications, to be held on September 7 and 8. Possible subjects for papers could include trade-offs for microprocessor selection in terms of hardware/software design; development systems — hardware and software considerations; microprocessor hardware design techniques; microprocessor software design techniques; and future trends in microprocessors.

Abstracts of papers for possible presentation should be about 300 words long and sent to Dr M. J. Taylor, Microprocessor Workshop, Computer Laboratory, University of Liverpool, PO Box 147, Liverpool L69 3BX.

Closing date for abstracts is May 1.

Cross-assemblers for BSO system

TWO new cross-assemblers for the BSO universal microprocessor development system are now available from Software Sciences of Farnborough.

With the introduction of the Zilog Z8000 and Motorola M68000 cross-assemblers the development tool can now be used with all currently marketed 16-bit microprocessors.

Music board for Nascom users

A MUSIC board capable of playing notes over a range of eight octaves has been introduced for the Nascom microcomputer by Luton-based electronics company, BBF Engineering.

The board comes in kit form with documentation, test procedures, programming notes and software examples for £18.65. An assembled version costs £21.65.

Scan Data beats target—but no divi this year

SCAN DATA International, the West Sussex mini supplier and software house, has handsomely exceeded its profit forecast for 1980.

Against predictions of a £250,000 profit, the company has produced a gross profit before tax of £281,000. This is almost double the 1979 figure of £149,000.

Turnover was also up substantially, from £1,855,000 in 1979 to £2,533,000 in 1980.

As declared in the company's prospectus when it placed its shares on the unlisted securities market last year, no dividend will be paid. Retained earnings per ordinary 10p share were 12.14p, against 6.48p in 1979.

The shares, already up 95p on the November launch price of 125p, rose 10p to 230p on the news of the profit.

This places the company on an effective price earnings ratio of 19, which means that the price being paid for the shares is 19 times the expected earnings of the company. Ratios like this are common where there is either expectation or promise of substantial growth, and have been occurring in America recently where Apple stock at one point was on a P/E of over 200.

Scan Data has been moving more directly into the mini and micro business in the past six months. Late last year, following the sale of its computer bureau centres, the company announced that it would be concentrating its business into distinct areas.

Scan Computers will focus on the minicomputer hardware and software offering TI, Multibus and Commodore equipment.

The company uses leasing facilities, arranged through third party contacts. This gives Scan the benefit of instant capital payments from the leasing companies, while being able to offer its customers a popular form of equipment financing.

Through its maintenance division the company offers an online remote diagnostic service called Scan Care. With this service Scan engineers are able to interrogate a customer's computer system from Scan's premises, and prepare maintenance or repair boards in advance of calling on the customer. In practice many faults are fixed without the expensive overhead of an engineer's visit.

Martin Baldwin, managing director of the group, told Computer Weekly that the trading environment was still very difficult and he would not wish to make any forecasts until changes in the economic climate became clearer.

The company is now offering the micro supplied by Onyx in the US.

Baldwin did observe however that he expected the price of business computers to fall in real terms. On that basis he said that Scan intends to head up-market to counteract the deflationary effect on profits of the fall in unit cost of processors. Scan Data expects to take the 16-bit version of the Onyx machine into markets in which it was not previously active.

The company, he said, would also be looking to expand geographically, but would be avoiding the scientific and military fields.

Discussing the £125,000 investment in Telema are Elizabeth Wood, computer analyst with Greene and Co; Joe Shaw, sales director of Telema; Ian Hilton, managing director of Telema; John Scholes, technical director of Telema; and Simon Knott, a partner of Greene and Co.

City money for Telema

TELEMA, the Cheshire-based microprocessor supplier has raised £125,000 from a consortium of City investors headed by Lloyds Bank investment management division.

The consortium putting up the money was organised by Greene and Co, the stockbrokers who specialise in computer industry analysis and was given to Telema in return for 32% of Telema's shares.

The financing operation was conducted on the basis of Telema's current sales or firm orders for over 50 of the company's Mercator supplied machines. Each sale is estimated to be worth £11,000 to £12,000, with perhaps £4,000 for what the company calls the skeleton software.

Telema managing director Ian Hilton says the company expects to install over 150 machines in the next financial year.

The Telema 1000 supplied by Mercator in the US is based on the Z80 processor, with hard disc capacity of 10 megabytes and tape cassette capacity of 12 megabytes included in the basic machine model.

Atlantic signs more deals—but profits slip £100,000

ATLANTIC LEASING, the biggest independent computer leasing company in the UK, is finding the going tougher since IBM slashed the prices of its 4300 systems.

In preliminary figures just released, the company reveals profit for the year at £1,037,000 against £1,164,000 in 1979, a decline of over £100,000.

Turnover, despite substantial leasing deals with Lloyd's, the UKEA and the Dutch government, fell from £16,955,000 in 1979, to £16,280,000 in 1980.

This is despite a 28% rise in the number of leasing deals signed during the year.

The company, while laying primary blame for the erosion of its profit margins on the lower IBM prices, also indicated that the average value of leasing deals had fallen.

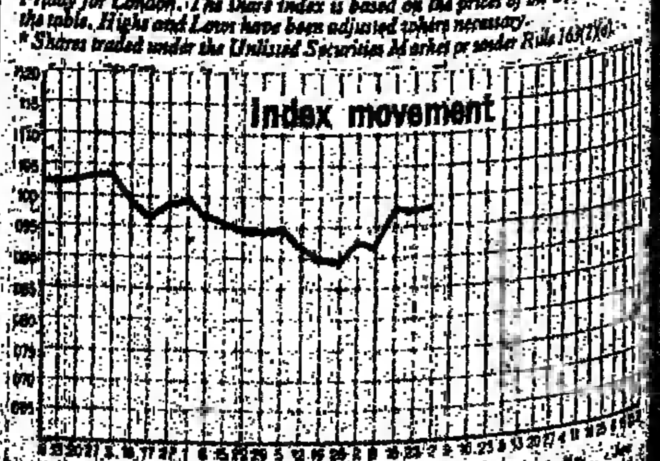
High interest rates in the UK also contributed to the slowdown in volume growth of turnover, according to the company, and it is the prospect of a general fall in interest rates which the company hopes will lead to a general improvement in profits in 1981.

Atlantic has increased its penetration on the Continent this year and looks to Holland and Scandinavia to provide much of its growth in 1981.

CW SHARES TABLE

The table shows the closing prices in America on Thursday and the mid-day price in London on Friday for London. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.

** Shares traded under the Unlisted Securities Market or under Rule 163(2).*



by Kevin Cahill

Second in our series on starting your own company

The best way to get a loan from your local bank manager

IN the second of our series on how to set up and run a small computer company, we look at the early stages of a small company's life, and at the kind of problems likely to be encountered by a small company as it begins its first financial relationships.

Most small companies need external financing above and beyond what their founders can provide. Some may even need external financing to get off the ground. For most computer companies the initial dealings will be with one or other of the high street banks.

The object of this article is to look at the services provided by the main high street banks and to consider the best way to approach your local manager for a loan or overdraft.

What do you really want?

The first thing to get clear in your mind, assuming you have worked out what you want your company to do, is exactly what you want from your bank.

This is not as easy as it sounds.

If you have an idea for a new software product, for instance, your first problem will be to explain to any bank you approach just what software is. If your brainchild is designed to run on an IBM 3081 you will hardly be able to demonstrate it, and the reel of tape that you may casually sling across the bank manager's desk could contain pornography for all he might know. So, make sure that the basic proposition or product you are asking a bank to help you fund is describable in simple terms.

Everything is, if you try hard enough.

Having given a thought to your product, next give a thought to yourself.

A bank manager will probably take a longer, harder, look at you than at the product you are so interested in. If you have known your bank manager for some time, perhaps through a personal account at the bank, he will already know, or think he knows, you.

This may be the moment for you to reassess the existing relationship and ask yourself if it will take the strain of the changes you are proposing and if the loans you are likely to want to fit the manager's concept of you as a person.

If you don't have an existing relationship, or are proposing to start up a new one, the following are the key points a bank manager is going to look for when he decides how much, if anything, he is going to give you.

Firstly, if he doesn't know you, he will want to be able to check with a referee. The best referee is someone who already knows the bank you have approached. If you don't have a referee of that kind, then someone with the kind of status that will mean something to the manager is next best.

Secondly, do you have a practical cash flow statement, such as we outlined in the last article?

Finally, do you look as if you have the determination to see your idea through? One way a bank manager will assess this is to see how well you have done your homework and how few notes he has to take. This does not preclude a preliminary chat before you set about your cash flow constructions, but when you go in asking for money you will be expected to present a businesslike approach.

How much to ask for.

A good cash flow will tell you how much you need, but there are other constraints, some of which are shown in the table below, in terms of what banks are willing to lend. One constraint may be the amount of security the bank wants, which in turn will relate to the riskiness of your project and your own business experience.

When deciding how much you want you should also look at the kind of money you want (ie, the type of loan).

All the clearing banks offer overdraft facilities, but remember that overdrafts are open to instant recall by the bank.

In one way or another each of the clearing banks offers various special loans for setting up businesses and it is usually possible to negotiate an acceptable agreement between yourself and a bank.

The key things to look at when seeking a loan are the repayment terms and the interest rate.

If you are into manufacturing your first chip-based device, the last thing you want is a loan that you have to start repaying the month after you get it. Unless you already have a strong cash inflow, insist on the repayment "holiday" that most banks will offer on new business loans.

The easiest term of interest is obviously the one offered by Barclays on its business start loan where you don't pay interest, but do pay a share of royalty on sales.

Always ask for enough at the start, if you can. It is never good to have to keep coming back to ask for more money.

Who are the high street banks?

The principal high street banks, often known as the clearing banks, are Barclays, Midland, Lloyds, National Westminster and Williams and Glyns, and in Scotland, the Royal Bank of Scotland. Between them they have 20,000 branches and are represented in almost every city, town and village in the UK.

In recent times a number of other organisations have begun setting up a branch network in the UK. The most important of these are the American Banks, Citibank, Bank of America and Canadian Pacific.

The American banks are often staffed by ex-high street bank staff. You will generally find the approach more informal than the average clearing bank branch, but you may find that the Americans are tighter on insisting that specific repayment terms are met. Also, the overdraft is not as popular with the Americans as with UK banks.

The two Irish clearing banks, Allied Irish and the Bank of Ireland have branches in the big cities in the UK and operate in a similar way to the high street banks.

● In the next part of the series Kevin Cahill will look at the other types and sources of funds available to computer companies. This will not appear until after the Budget on March 10, when major changes are expected in the way small businesses can offset investment against tax.

BANK	TYPES OF LOAN	AMOUNT OFFERED	PERIOD OF REPAYMENT	INTEREST RATE	SECURITY
Barclays	Business Start	£5,000-£50,000	Capital at end of five years	Royalty linked to sales over 5 years	No personal security needed
* Range of useful booklets available.	Business expansion	£5,000-£500,000	2-20 years	Interest on balance or variable attached to MLR.	Negotiable with bank. Security is generally required.
Midland Bank	Venture loan	£5,000-£250,000	1-10 years	3% over Midland base rate.	Negotiable with bank, but generally required.
	Long term loan	£20,000-£500,000	10-20 years	Fixed or variable.	A good freehold or leasehold is usually required.
Lloyds Bank	Enterprise loan	£25,000-£250,000	Up to 10 years	Variable	Normally taken.
	Medium term finance unit loans	Wide range offered	Negotiable	Variable	Normally taken.
National Westminster	Venture Capital	£10,000-£50,000	An equity option to NatWest	Fixed interest 8½% on secured	None other than the equity option.
	Business Development loan	£2,000-£10,000	Monthly for 1-5 & 6-10 yrs	9½% on unsecured loans	Rate of interest is attached to loan.
Williams & Glyns	Business borrowing plan loan on fixed rate	£10,000-£250,000	Up to 10 years	Fixed at time of loan	Normally required.
	Variable rate loan	Any amount	Up to 20 years (any period)	Linked to W & G base rate	Normally required.

What the five main banks have to offer

Backing of C&I for Midas

THE industrial holding company, Commercial and Industrial Securities Ltd, has taken a majority shareholding in Midas, the West Sussex distributor of Sord computers.

The Sord range of systems, which are also sold in this country by Exleigh Business Systems in Penzance, is beginning to show the kind of growth pattern commonly associated with Apple. Sord now manufactures in Japan, China and Dublin, and sales have risen in four years from less than £250,000 to over £20 million worldwide.

The logic of the merger between Midas and Commercial and Industrial holdings is not immediately clear. C & I's other interests are concentrated in building contracting, engineering and mobile homes.

Reuters speeds deals

REUTERS, best known for its news services, launched a new international money dealing system last week.

The service, which is available in the US, Canada and seven European countries including the UK, was started simultaneously in all nine countries and will enable banks to execute money deals direct from the terminal on which the latest money rates in each country are available in each country are available.

The dealing system, which took over five years to develop, and which cost £8 million, is running on 18 DEC machines scattered around Europe and North America.

In each office which uses the system there is a mini computer to handle the transactions locally.

Graphic sales

RAMTEK, which claims to be the world leader in colour scanner graphics, one of the most dramatically expanding computer oriented markets in the US, had sales up 31% on a quarterly basis. Sales for the second quarter of 1980, which ended December 31, were $8.1 million against $6.2 million for the same quarter in 1979.

The company has expanded in Europe by taking new offices near Amsterdam and appointing three new senior managers.

US terminal sales take a tumble

A BIG SLOW-DOWN in the growth of display terminal sales in the US over the last year is highlighted in a study* on the US display terminal market up to 1985, carried out by the US consultancy Advanced Resources Development. Printer manufacturers also face a rough time because of tough economic conditions and fast technological changes according to a study** on the worldwide printer market up to 1985 published by another US organisation, the American Computer Appraisal Service.

The Advanced Resources Development study blames high interest rates and a recessionary economy in the US for the comparatively feeble 18% growth rate in display terminal shipments during 1980.

The study points out that the display terminal industry has traditionally achieved annual growth rates of 30 and 35% and that US manufacturers started 1980 with high backlogs and expectations of growth rates exceeding 30%.

Growth at the low end of the market in 1980 was a relatively strong 20% mainly because of increased production and delivery of the Digital Equipment VT-100. But the report predicts that sales of these "dumb" display terminals will show slower growth over the next five years because features will be added to move them to the "smart" or editing terminal category.

Advancing sophistication in serial matrix printers and improvements in electronic means of reproduction are two of the factors that will serve to weed out the weaker competitors in the printer market between now and 1985 according to the American Computer Appraisal study. Even the large US manufacturers are seen as being in danger of losing control of research and development expenditures as marketing strategies shift.

*CRT Terminal Markets, 1980-85. 150 pages. $1,295. Advanced Resources Development, 28A Park Street Station, Medfield, Massachusetts, 02052, US.

**Printer Market 1980-85. 60 pages. $270 pre-paid. $295 billed American Computer Appraisal Service, 712 Beacon Street, Boston, Massachusetts, 02215, US.

GILB'S MYTHODOLOGY

Eleven guidelines for evolutionary design and implementation

I HAVE discussed the evolutionary method of delivering and designing systems in several earlier columns, but it is still a hot topic requiring a lot more space than a column can ever give.

A week ago I used a day to demonstrate the potential of this method for simplifying the delivery process for a gigantic social welfare system (old plans were for a 657 work year-project, just to "distribute the data processing" in relation to the present centralised online and batch system).

As predicted, we found clear evidence that the project could be delivered in something like 100 distinct steps of useful results to the user. Mind you, that still makes 6¼ work-years per step as an average.

At the present state of planning, where they had sincerely tried to find evolutionary paths for development, and come up with five or ten steps at most, the politicians had simply delayed the project because of its unacceptable scale and cost. They were talking (writing, actually) about using ten years to develop the new decentralised system, and then to use it for a "lifetime" of ten years. No wonder the politicians were in doubt!

I found that this project (although much better planned in evolution and attribute goals than I find in most other places) had totally forgotten to set any concrete ambition level for costs or training needs for the user. They had calculated what they thought these would amount to, in great detail. But they had made the fundamental mistake of not even having a clear ambition to reduce costs or training needs in relation to the old system. No wonder, again, that the politicians were not impressed.

But back to the mainstream of this column — evolutionary planning attributes. I hope the following list makes you wonder how to do evolutionary planning. Intuition works reasonably well. Unfortunately the method is not taught in schools of any sort, nor is it documented in the literature.

1. Early system partial delivery (typically from 5% of project expenditure: and the early increments might include most of the real usefulness, by conscious design, not by accident).

2. Earlier *successful* total system delivery. The feedback and adjustment to planning and design, which characterises evo-planning, leads to faster completion of a system which succeeds in attaining user and management objectives.

3. Requires more design and planning "imagination". The art of finding a productive sequence of implementation steps is undeniably greater than simply throwing all functions and techniques into the same pot of stew.

4. Simplifies understanding of complex cause and effect relationships. When something goes less well than expected, then the cause is related to the last step.

5. Better management control: the ability to cut off the project in the middle (and still have some results to show for your effort), the ability to see visible results in small controllable increments (management loves this).

6. User control: early user reactions can realistically affect the future implementation steps. No more of this game of the innocent user representative "approving" the revolutionary design and then turning around when the system is implemented complaining (reasonably) that this was not what he or she was led to expect.

7. Gives you a measuring tool: for costs, human resources and results. This improves your planning ability iteratively. The early data from real increments improves your predictive capability substantially. You might have to adjust your "final-stage delivery-date" after 10% of the race is run, but that is better than having to adjust the date after 150% of the race is run.

8. Planning is spread throughout the project: no front-end delay. I normally allocate a maximum of 5% project cost for the high level "global" overview design planning, before embarking on the detailed design and planning for the first implementable step (only that first one, mind you, in detail). Not only are results delivered before the planning overhead crushes the project, but the detailed planning benefits greatly from the experience gained in early implementation stages.

9. There is time for an organisational learning process. The system can be learned in small natural increments, often moving away from the old system while learning the new one. No gigantic training budget is necessary for the "new system" — in the case cited earlier the training budget alone was over £3 million: I felt it should have been much nearer zero.

10. Gradual ability to build up necessary database. In many systems a large and accurate, up-to-date database is a prerequisite for successful operation. It needs to be built up early (in the first months of the project) and the users must gain experience and motivation to do so. Most evolutionary projects can bring in needed data elements into the database gradually as function and quality are built in.

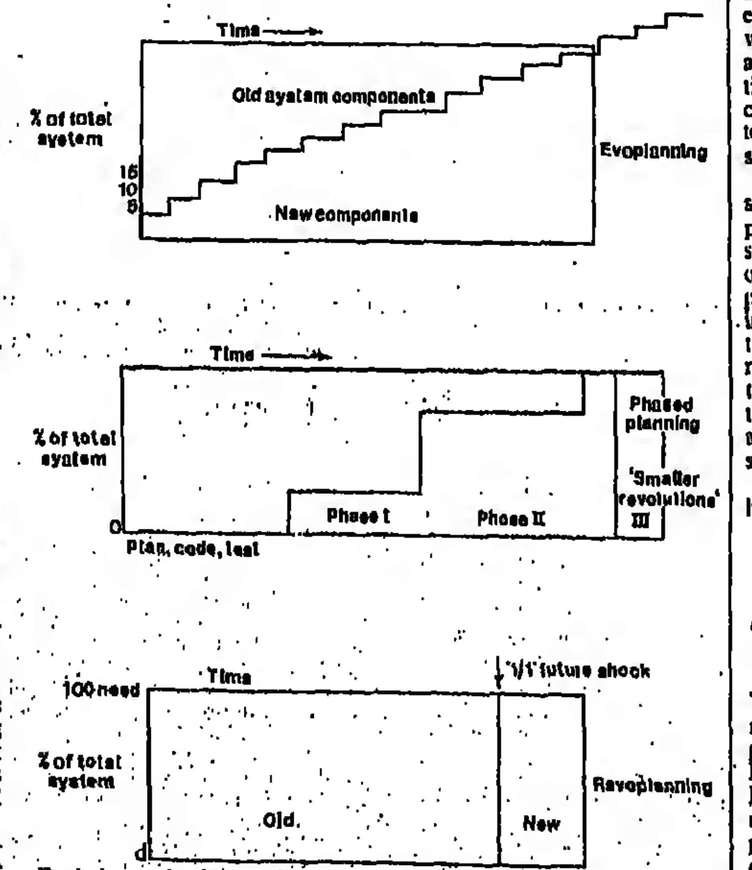
11. Developers are "forced" to learn to build maintainable and extendable systems. If you don't they will painfully be motivated to do so.

Tom Gilb is an independent consultant, lecturer and author on computing topics.

A reader from Barnet, Herts, wrote recently to enquire about "a book of his (Gilb) that revealed all" on evolutionary design, which he was fairly sure I was plugging in an earlier column.

Sorry, the book isn't for sale yet! I have described the method in some detail in my new book manuscript "Technoscopes", which is presently being edited for publication by North-Holland. So, for the present, you'll just have to get it free here! But I would be most pleased to satisfy readers' curiosity or scepticism here in the column, if they would care to write with their query.

Tom Gilb



Evolutionary implementation methods are the third generation of planning techniques for computerised systems.

FOCUS

A question of priorities for busy DPMs

FINDING time, or making the best use of it, is probably the most vital and under-emphasised role of DP management. Relief, however, could be at hand from the NCC which later this month is staging a one-day seminar, Getting The Right Things Done.

For £112.70 those involved not only receive guidance on how to find more discretionary time, and establish key time critical areas, but also on individual memory recorders and planning systems.

Ignoring the possibility that a more structured and practical approach would have been to issue the planner at the start of the year with the event heavily underlined, it could be that many DPMs will be unable to make the seminar due to lack of time, pressure of work and over-commitment.

The course is designed for busy executives of the kind who find themselves tied-up with the trivial at the expense of devotion to the essential. Whether spending a day with the NCC in Central London automatically qualifies as an essential activity is debatable, especially as the session makes no claim to have discovered the universal solution kit.

However, should the NCC have stumbled upon the ultimate DPM package, then indeed all directions should lead to the event. Few other areas of management compare with the responsibilities and involvement of DPMs, where there is seldom enough time, but over-abundant quantities of trouble and turmoil. Hopefully, the NCC will offer comfort and advice in the face of great adversity, provocation and harrassment.

A day in the life of a DPM could begin with the news that the senior shift operator is off sick and that the two trainee operators have defected to the better paid pastures of the local gas board installation. Further news bulletins reveal that the warehouse manager, once a staunch opponent of a computerised stock control system, now is threatening to dust-up the entire DP team unless his VDU is put back online immediately.

The inter-office memorandum channel gives notice that at some stage during the day's proceedings, the managing director will be bringing round a squad of VIPs for an installation tour, the systems progress meeting has been brought forward by one hour and the local fire brigade site inspection team will descend some time during the afternoon.

Should the DPM have time to consult his diary, he will find already listed a warning that the system will have to be closed down at some stage during the day while a critical diversion is made to the air conditioning trunking, scheduled interviews with a batch of programmer hopefuls from Hatfield Poly, and a heavy lunch with a keen PCM supplier.

Meanwhile, the installation switchboard is coping with a stream of calls to the DPM from sundry stationery and media suppliers, and the company accountant who is demanding the immediate presence of the DPM on a matter of budgets and expenses.

The normal course of events often precludes the DPM from attending even a one-day seminar. But in the case of the NCC session, maybe all calls, memos and visits should be buffered for one day until normal service is resumed.

10 YEARS AGO

From Computer Weekly of March 11, 1971 . . .

THE long-awaited 370/135, announced this week by IBM, is of particular significance to the UK. It will be manufactured for Europe, Africa and the Near East at IBM's Havant, Hampshire, plant . . . Large-scale redundancies, amounting to about one-third of the professional staff, have been announced by 1900 Programming UK Ltd . . . Systems International (UK) Ltd has gone into voluntary liquidation as a direct result of the collapse of Rolls-Royce, which had a 40 per cent share of the company . . . Honeywell has introduced the Series 6000, six medium-large to large computers.

DOWNTIME

This film will blow your mind apart!

IN case, next month when a new film called Scanners hits the screens, you are led to believe it is a celebration of British achievements in Computerised Axial Tomography, I print this picture as a public service. The unfortunate gentleman is not the victim of an overdose from a scanner whose tracking mechanism is stuck, but rather of a nasty person with "extrasensory powers."

I am not quite sure what senses have to do with the ability to make your enemies' heads explode by remote control, but that is the explanation put about by the film's distributors, who add sweetly that the phenomenon gives the film plenty of tension.

"You never know when the next head will explode!" they coo.

The film is generally about what you would expect, a devious plot to take over the world telepathically, and needless to say there is a computer playing a starring role. The interesting thing is that the villains (now wait a minute — I mustn't assume they are villains — perhaps they are the heroes) are capable of communicating extrasensorily, not only with people but also with computers.

Whether they can work both in Ascii and EBCDIC, and whether they are capable of ploughing their way through the tangled web of VME/B in search of information, is not revealed yet. I'm not sure whether I am capable of reviewing another film after the trauma of going to the porno movie Computer Game, so maybe some kind reader will let us know.

Just one of Scanners' explosive heads.

Red faces — or just green with envy?

AMID all the fuss over yellow telephone kiosks it is interesting to note that there has been for many years one British Telecom phone box that is not red. Who among my readers, I wonder, is knowledgeable enough to know where it is? It's an object lesson in influence in high places.

The Institution of Electrical Engineers has an imposing red brick headquarters on the Embankment near Aldwych. When a kiosk was placed outside some time in the dim and distant, it struck members that the colour clashed horribly with the red of the bricks.

Now, of course, most Post Office professional engineers are members of the IEE, so it didn't take long to pull a few strings to have the box painted green.

When the traditional design was replaced with one of those horrible modern plastic things recently, the new box was yet again painted green.

So there's a piece of useless general knowledge to impress your friends with! I wouldn't place any bets that that box will succumb to the new yellow peril.

Hope springs eternal . . .

A CERTAIN Tory politician, whom I will not name to spare his blushes, was telling me about his forthcoming trip to the States. He said he was looking forward to going to Silicone Valley (sic) to visit Inmos. He'll need awfully good eyesight to see the 950 miles to Colorado Springs.

ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, March 12, 1981

ICL and the future

BRITAIN needs a strong presence in all the main areas of the computer industry. Computer Weekly has always rejected the insistent murmur of marketing arguments which say that Britain should buy from those who seem to have better technology and better products already, rather than take on the costs and risks of building them ourselves. We continue to reject those arguments.

Being big in computers implies a big computer company to produce a big range of products from big computers downwards. For this country, that company is ICL. And today ICL is in trouble from factors which go deeper than any temporary height of interest rates or of sterling.

To be a big computer company, ICL is not big enough. It lacks the breadth of markets, the product range and the financial resources. Without them it cannot get bigger relative to the Burroughs of this world, let alone the IBMs.

Take those defects in order. ICL's acquisition of Singer's European interests in 1976 brought with it two manufacturing sites in the US and an entrée into that crucial market. But, for whatever reason, the manufacture of mainframe products like the 2903 was not transferred there, and the marketing spend needed for success was not made.

True, ICL is strong in Europe, the world's other major market. But only in France is it powerful. In West Germany the company is overshadowed by its US rivals. Elsewhere in the world Japan Inc remains a closed market and only Australia and South Africa shine.

□ □ □ □

What about the company's products? On any reckoning the 2903/4 has been a success, and the ME29 looks set fair to repeat it. ICL has sensibly dropped out of the very top end of the market, so will not attempt to match IBM's 3081, for instance. But it badly needs a competitive product range in the area addressed by the System 10, a now ageing inheritance from Singer, and it does not have a mini range to match, say Univac's or Honeywell's.

ICL is also noticeable by its absence from the office automation field, with its single product, the 7700 word processor, not a promising contender.

Operating systems to go with the mainframe products continue to cause headaches. VME/B is still not right, to such an extent that current customers continue to specify the old DME George 3. Yet IBM and Univac have had similar horrors with operating systems and managed (more or less) to straighten things out.

The speed at which ICL converts new technology into products — a key test for any computer company — can be impressive. Witness ME29. But too often its outstanding R&D successes do not result in immediately saleable products.

The other element for the big company — its financing — is the difficult one. An analysis reported on page 5 concludes that ICL may go for a rights issue to raise money from shareholders, but that to be successful this will depend on like support from the government.

Whatever the details, this question is fundamental. And the answer lies with the government.

Perhaps the company's efforts to stem cash outflow and fight back to profits will succeed without the government's intervention, or at least with only marginal support. Then doubtless share-buyers will lift their sights above short-term problems and back ICL with their funds.

But by then the clarity of the company's dilemma will be lost. It is Britain's problem that ICL is not big enough. Some governments already have big computer companies (the US), some are making sure they get them (Japan), some will fight tooth and nail to build them (France), and some will keep paying to keep them alive (Germany).

What about us?

1984 and all that . . .

THE first reader to send in this week's example of the strange things people say in the media about computers was Colin Rutter, of Croydon, who wins £5.

As each generation of electronic events come off the design board it is not just the over-40s who get left behind . . . Almost without our noticing, we are returning to a twilight world of priests and primitives — where the priests, secure in their exclusive knowledge, can dominate and dictate the shape of the lives of the rest of us . . .

What inferences can we draw from the fact that by 1985 a pocket calculator that costs about £1 will be faster and have more "memory" than today's most powerful computer, the Cray 1, which is worth about nine million dollars?

Daily Mail

LETTERS

It is not enough to donate old hardware to your local school

I READ with sympathy the plea from Mr Ballson of Gillott's School (CW, January 15).

My own school has been using an Olivetti TE900 online to a Horizon 32K microcomputer and another four Olivettis for offline data/program preparation on to paper tape, for over 18 months. Continual breakdowns of the "donated" machines have now reduced our service to two teletypes with a frustrated teacher, screwdriver in hand, and well over 100 enthusiastic pupils joining an ever-increasing queue!

Many, especially those in "authority", would argue that schools that persist in using donated machines ask for all the trouble they get. However, such people do not tell us how or with what we must teach the many pupils who have been awakened to this "new technology". One micro/terminal is a joke!

Co-operation between the industry and schools must be *part* of the answer. It is simply not enough to donate old equipment to your local school. You must supply manuals, circuit diagrams, etc, and even more realistic is for many industries to donate, say, a couple of hours of their engineers' time per year to a school to help overcome maintenance costs.

If a donated machine will then last for, say, a couple of years before joining that great peripheral paradise then it is two years that the pupils of that school would not have had, without such generosity and co-operation.

I find it quite unacceptable that a company the size of Olivetti could not take the trouble to secure the appropriate manual for Mr Bailson. Surely they have files on past customers and records of past machines.

Only with adequate provision for computer education for *all* children in our schools will so many of the comments found in 1984 And All That finally disappear.

I am asking for much more from hard-pressed industries than we have had. But for a little cost and trouble the investment made in our kids must be worthwhile.

CHRIS MONK
i/c Computing Studies
Philip Morant School,
Colchester, Essex.

Training computer teachers

IT was good to read John Cookson's article (CW, February 19). His identification of teacher training as a "major problem" was unfortunately buried in the much less important issues of programming languages and school hardware. If we can get well trained teachers of computing then not only will better equipment and software appear in the schools but better use will be made of these precious facilities. It hardly needs reiterating that "programming" is not the only activity needed in schools (some would claim the least important). Thus the national initiative should be for better facilities for preparing teachers in computing as a school discipline and as an important feature of the general school curriculum.

Traditionally many LEAs have encouraged in-service training in the form of short courses, conferences and workshops. The Advisory Unit for Computer Based Education spends a great deal of its time and money on this in Hertfordshire. Despite this wonderful example, few other LEAs have even considered such an investment in their young people's future. It is therefore unlikely that the DES support of some similar activities under its £9 million microcomputer programme will bear fruit. Hopefully LEAs will not see this trend of government intervention as an excuse for not making their own commitment. Some authorities will be wondering why they cannot recoup the cost of their courses for teachers.

Some progress is being made. Computing has now been recognised as an area of teacher shortage and will be supported under the joint Manpower Services DES programme next year, 1981-82. A pilot one-year course is to be mounted, probably at South Bank Polytechnic in London. The Computer Education Group has responded to its members' concern about this problem and has produced a course outline for a one-year full-time diploma or two-year part-time diploma in Computer Education (published in Computer Education No 37). Institutions throughout the country will be encouraged to provide this course. Its success will depend on its being supported by LEAs.

Two or three courses already exist. Some notable initiatives have resulted in CNAA approved part-time courses in Polytechnic of Wales and Paisley College of Technology and Jordanhill College of Education in Scotland. A similar diploma exists at Ulster Polytechnic and is being validated by the CNAA. This new professionalism in teacher training for computing should be welcomed as the natural evolution from many local initiatives which have promoted courses for teachers, e.g. courses at Preston Polytechnic (with Lancaster University), Kent University, Birmingham University, Teesside Polytechnic.

I would not wish to suppress interesting debates on programming or the suitability of computer systems for educational purposes, but we must get our priorities right. Well prepared teachers can make up for deficiencies in hardware and software but not vice-versa. The existence of a well educated body of teachers is the main requirement for progress in the use of information technology in our schools. This must be recognised by the Ministers concerned.

Professor D. E. CONWAY
Leicester Polytechnic

What sets The Last One apart

E. P. GOROCHOWSKI (Letters February 26) clearly has not read the article about The Last One in Personal Computer World (February 1981). If he had, he would realise that it is not a device, but a suite of programs which enable the user to input a program design by selection of flowchart options from menus presented by the system. The Last One then checks the design for completeness and logicality, pointing out areas of weakness to the user who can immediately modify the design. Once The Last One is satisfied with the design, it will then write program code in Basic, at the moment, but there is no reason why it should not be in any other language. File creation is also handled by a suitable module.

The interesting things about The Last One and which set it apart from other program generators are that it can run any machine from a micro upwards, has a certain amount of intelligence and it is easy to modify files or programs even if they have been in use for a while.

If file lay-outs are changed, for example, then all records in that file are reconfigured to the new lay-out, warning the user if any loss of data is involved. Then, and this is even more interesting, all programs accessing the changed files are rewritten to take the changes into account.

Mr Gorochowski's comments are interesting but they miss the point that this system operates at a higher level than existing languages and program generators. The user does not have to learn complicated rules or syntax details; his primary function is to answer questions in English on questions posed by The Last One on the screen.

Finally, while not permitted to give away any secrets, I can tell you that the system does not work by bolting together chunks of prewritten basic code.

DAVID JAMES
Inventor of The Last One
Computer Systems Specialists,
Ilminster, Somerset.

Teaching tools

COMPUTERVIEW does not mention the applications of speech synthesis in education. We are trying to develop software to help with the teaching of reading particularly in the remedial class and an easily programmed, versatile, and cheap speech output would increase the effectiveness of our programs enormously.

Until it can be demonstrated that microcomputers can really help in these bread and butter sectors of the curriculum they will not be accepted as valid teaching tools in the primary schools of the country.

DON WALTON
Houghton County Primary School,
Huntingdon.

What about the Pope?

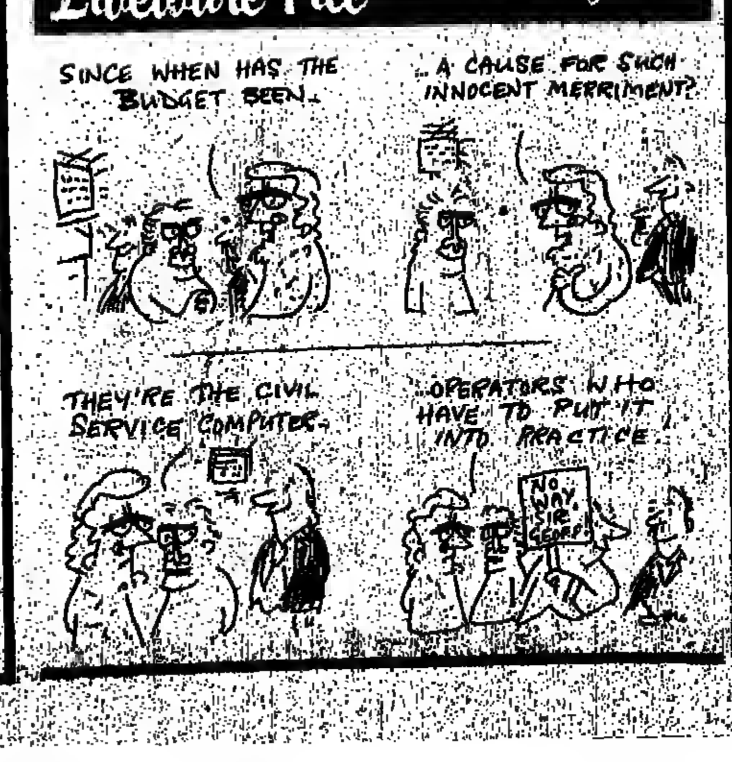
I WAS intrigued by your report (CW, February 26) that the Church of Scientology in the UK is seeking to have Britain's dealings with Interpol suspended until its legal status is clarified.

Is the C of S seeking the support of the Pope and the Archbishop of Canterbury?

DEREK BRADLEY
Sanderstead,
Croydon.

More letters on page 16

Liveware File by Don



LETTERS SPECIAL

More readers reply to the Donald Michie/Alan Sutcliffe debate in Computer Weekly on information creation

Knowledge is in individual mind — not part of the external world

AS a new regular reader of Computer Weekly I am not aware of the roots of the argument of which the latest participant is P. S. T. Buckerfield (CW, February 12). It does seem, however, either that the argument never started at a reasonable definition of "information" or it has wandered so far away as to become meaningless.

The Buckerfield argument seems to take almost a primitive thermodynamic closed-universe view of "information" and does not have much relationship to what goes on for the mass of people in the real world.

Is it not time to get back to basics, to agree on some fundamentals of terminology?

Too often is "information" used as an up-market garnish for computing, librarianship, television, telephoning and even those gentlemen sent out on behalf of their company — the PR men.

Let us look at three old terms in a hierarchy.

Data comes from the Latin "dare" — to give. Anything which can be perceived or demonstrated as it is, by itself, regardless of context, is a datum. The flavour of the word is well conveyed by two phrases which most children and all experimentalists have grown up with: the notion of "given" in elementary mathematics and the phrase "raw data" of experiments. Note that there is no restriction to number alone — a colour, sound or shape can be as much a datum as a number. Data can be processed in a transliterational sense.

In the Buckerfield example, a water level can be transliterated into a transducer position into a voltage pulse into a wave modulation . . . into a few photons entering an eye. At no point in the chain is information created. At the end of it all there is merely an awareness of light/no light which is no more and no less "information" than the awareness of wet/no wet obtained more directly by going and poking one's finger into the pond. Much of what Buckerfield discusses is not concerned with information at all. It is all about transliteration of data, or even of flows of data. Note "transliteration," not translation.

Translation requires understanding of the idea contents and of the connotations of sounds in two languages; transliteration is a purely mechanical task of rendering one language into a standard set of letter codes other than that in which it is usually rendered. A good audio typist can transliterate a spoken language without knowing anything whatever about the language or the subject under discussion. It is immaterial to the argument that a transliterator who does know something of subject and both languages tends to make less errors.

Information comes from the Latin "formare" — to give shape to. This immediately tells us the essential thing about information which seems to have got lost in previous published argument. Information is *always* at least one level of abstraction away from reality. Moreover it is impossible to consider the notion of information without considering the context and all assumptions inherent therein — as it is impossible to define a shape without using some frame of reference. Complex as the philosophy may be, it is this one abstractive, pattern-giving, step which is essential to human existence.

The average human brain is not in the league of cheap pocket calculators when it comes to the number-crunching form of data transliteration. It is not in much of a league of many kinds of cheap equipment when it comes to most other kinds of data transliteration — how many people have absolute pitch, absolute smell, absolute colour vision . . .? What the human brain makes and manipulates well is patterns, often by mapping current awareness on to past experience. Our brains are primarily information processors, not data processors.

Although both data and information can be internal to the brain, they can also be externalised. It is possible to write down an assembly of experimental data and then to disappear without further communication. Somebody happening on the experimental equipment and the data can then give form, say graphical, and leave the information behind when he disappears. A third party can take that information and act upon it in ways which increase his probability of survival or decrease his chance of non-survival. But before he takes that action upon his external world he has to do something with the information. He has to internalise it, he has to turn it into knowledge.

Knowledge is what is in the mind of an individual and is not part of the external world. It is that further abstraction and selection of information which is peculiarly one's own. The lawyers have it clearly when they distinguish between knowledge and hearsay. Knowledge is not communicable, until such time as we all become perfect and selective telepaths. Doubters of this proposition should enquire of the sec[illegible] teacher. All that can be done [illegible] externalise one's knowledge [illegible] formation, and hope that one [illegible] so in a way which encourages [illegible] and effective reabsorption [illegible] knowledge in another head. [illegible] of the ineffective uses of comp[illegible] ing, as with any other techn[illegible] and medium, stem not from [illegible] competencies in capture of data [illegible] forming of information, but fr[illegible] failures of presentation.

In summary, on my definition we do not have the Buckerfield's primitive thermodynamic [illegible] notion that information ca[illegible] neither be created nor destroyed. Rather we have the expanding [illegible] verse notion of continuous creation. It surely accords [illegible] with the commonsensical obs[illegible] vation of the world about us: [illegible] is being continuously observed [illegible] transliterated; it is being [illegible] uously shaped into information [illegible] busy little people are continuously abstracting it into their [illegible] knowledge; and hopefully are continuously acting upon their [illegible] responsibility to regurgitate it [illegible] easily assimilable information [illegible] others.

Otherwise there is going to [illegible] no news, and no CW to contain it.

D. P. MOO[illegible]

OCCAM,
Chesham, Bucks.

It all depends on what you mean by information

THE interchanges between Donald Michie and Alan Sutcliffe on the topic of information and knowledge must be leaving many readers wondering what it is all about. Some explanation is in order.

There is no satisfactory scientific definition of what we all know as information. Professor Michie quotes and uses a definition developed by a communications engineer named Shannon and applicable to strings of symbols. A not unkind word for a definition is that it is an assumption.

Based on his assumption Shannon developed a theory that has enabled enormously more symbols to be communicated through a channel of a fixed bandwidth. All scientific theory has to be based on some assumption or other and the work is not the less valuable on that account.

Difficulties arise if attempts are made to apply the theory outside the bounds of the definition or assumption. Shannon's definition is for strings of symbols. The theory is equally applicable to strings of random meaningless symbols as it is to the character content of the most erudite scientific paper. Shannon called his a communication theory.

Of course his communications were of information but in the defined sense, not in the common everyday sense of the word.

As we have no other word for information that is outside Shannon's definitions it becomes very difficult for the layman to come to terms with the scientific precision of Professor Michie who is, of course, always referring to Shannon defined information.

As a contribution to the discussion here are two terms:

Relative information is information as defined following the theories of Shannon.

Absolute information is the totality of what we observe in our everyday life. Think of the view at the top of a hill or what is heard on the performance of a piece of music.

Science has not yet come to grips with absolute information. For one thing absolute information is infinite and cannot therefore be counted or measured. If you assume that you can count you assume a finite number of things to count. Absolute information is everywhere, which is another way of saying it travels at infinite speed.

Science makes an assumption about the existence of a [illegible] which rather puts anything existing everywhere outside its bounds.

Einstein's theories, interestingly, do not state that infinite speed is not possible and [illegible] case being based on the [illegible] sumption do not necessarily [illegible]. These are perhaps rarefied [illegible] but with no definition of absolute information everyone thinking about them is at the same level.

Why do Donald Michie and Alan Sutcliffe not agree with one another? In a nutshell it all depends on what you mean by information. This is still an open question even though in the everyday sense we all know what information is when it reaches us.

CLIFF DILLOW[illegible]

Stroud,
Gloucestershire.

Behold the Creator

AT the risk of perpetuating ad nauseam the debate between Donald Michie and Alan Sutcliffe on the creation of information, may I associate my view with that expressed by P. S. T. Buckerfield? (CW, February 12).

Information may be stated informally to be that which removes uncertainty; it is not an absolute entity, however, and only has quantitative value within a specifically defined context.

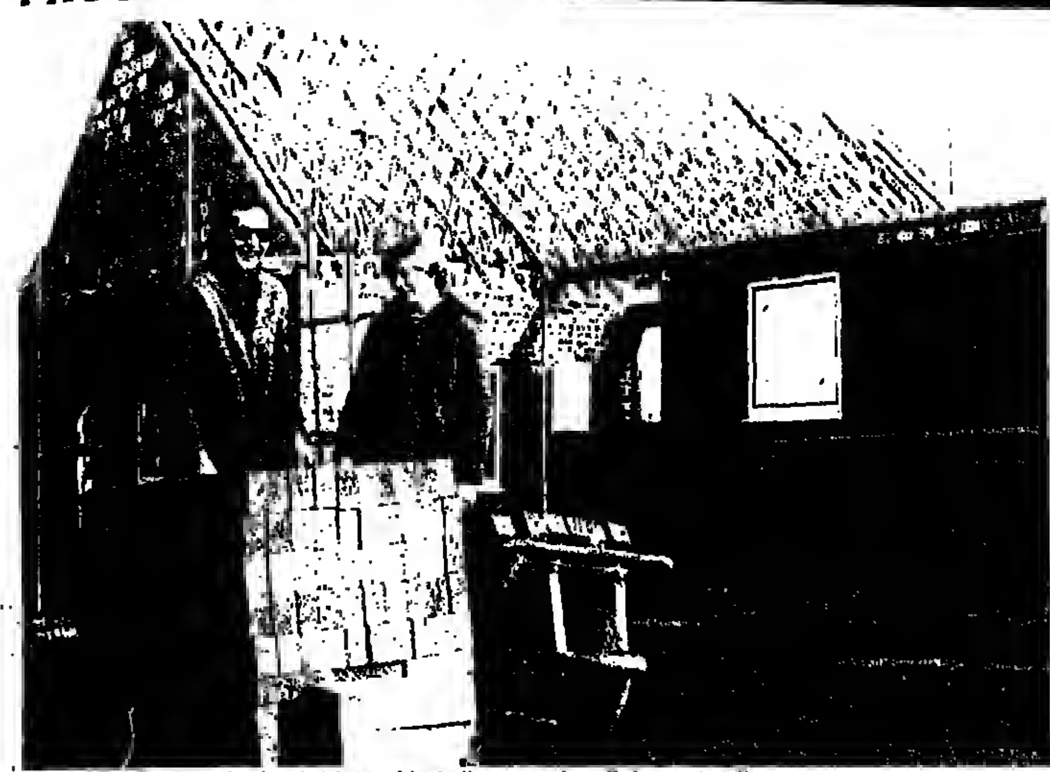
Talk of "the creation" of information, in any absolute sense, therefore, is impossible; "creation" is merely determined by defining the context.

As Norbert Wiener [illegible] stated: "Information is information, not matter or energy. No materialism which does not admit this can survive at the present day."

GRAHAM C. HAT[illegible]

[illegible] Computer Systems,
Bracknell.

PROGRAMMERS PAGE



Alan and Lyn Purdie unloading bricks outside the "computer house" they are building.

Programmer's ideal home

By Judith Hamilton

A FORMER Marconi computer programmer is building a house with a computer as one of the fittings.

Alan Purdie, head of Acorn Construction, believes that his house at Great Horkesley, near Colchester, is one of the first to be designed and built around a computer, and that within five years there could be many domestic computers in use, especially in executive housing, where a link with the office can be vital.

After 14 years with Marconi, Purdie felt the need for a change of career and left the company in 1973. Three years later he set up a small business as a builder of individual houses and domestic extensions. It is still going.

He retained, however, an active interest in computers, and for the past few years has been working towards the possibility of planning the first computer house, researching into the types of computer suitable for domestic use, and looking for the ideal site.

At last the two have come together, with work now well under way on the four-bedroomed split-level bungalow on an attractively wooded two-acre site on a gentle hillside.

The computer selected for this project (a speculative venture) is the Video Geni System EG 3003. Purdie points out that any microcomputer now available would probably be equally suitable; but this was the most economical, and offered a basic system which could readily be expanded as required.

He deliberately chose a machine with a typewriter-style keyboard and Microsoft Basic language, so that the computer would be easy for the household as a whole to use and understand.

He is, however, providing a full back-up service, with standard programs, instructions, and servicing.

Purdie sees the computer as having particular relevance to energy conservation in the home, and has long been an advocate of high insulation provision in houses, combined with the use of maintenance-free materials.

As the wiring needed for computer monitoring is being installed during construction of the house the cost is minimal, and Purdie expects the machine itself (complete with VDU) to cost the eventual purchaser only about £400 of the total house price — which compares favourably with other house fittings today.

With the growing interest in the teaching of computer sciences in schools, he sees a bright future for domestic computers, and those already hooked on video games can create their own versions.

In fact, Purdie, his wife Lynn and their two sons (Nicholas ten, and Marc seven) are already expert in handling a computer and enjoy the challenge of graded maths tests programmed by Dad, with a video yacht race as light relief.

PUZZLER

THIS alphametic problem may not be the hardest we've ever published, but it's certainly one of the longest! As usual, each of the ten letters used represents a different digit. See page 47 for solution.

```
SEVEN
THREE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
  ONE
 ONE+
------
THIRTY
```

by Pamela Rowe

How new technology will change the school of the future

ALL this new technology in the classroom is sometimes more trouble than it's worth. Witness the harassed schoolmaster, striving to keep the attention of a classful of 12-year-olds, while fumbling over the projector. He switches on and nothing happens — it could be a fuse, dud bulb, or something wrong at the wall.

The gulf between words of wisdom and illustration yawns wide with boredom. How simple it used to be to pick up a piece of chalk and draw on the blackboard. Small wonder the teacher feels like throwing a plastic veil over the crouching machine at the back of the room.

However, things are improving, and technology in the future school will not so much complicate as diversify the educational scene.

There are three major ways of receiving instruction. One is as part of a group in a classroom, another by self-study but still within the group under the tutelage of a teacher, or thirdly as a student at home or distant from the main institute. Microelectronics will have a varying effect on all three.

> Access to micros should be so common that computer programs could be sent via telephone line or radio to provide an instant home library.

In the classroom the heavy, unmanoeuvrable machines will be replaced by lighter, portable, more reliable audio-visual aids. All the equipment needed for one lesson can be programmed in advance on to a micro, so that the teacher can summon up an insert or filmstrip by pressing one or two keys.

Print has hitherto been the mainstay for self-study, either alone or in company. This will give way to more extensive use of machine learning and programmed instruction. The difficulty is the shortage of software and trained teachers, but a £9 million subsidy to support microelectronics in British education is to concentrate almost completely on curriculum development, software preparation, and training.

Self-study within the group imposes great demands on a teacher's talent for organisation. He must plan the equivalent of individual courses and monitor several layers of progress. In time, the computer will also manage as well as instruct, lifting the burden from the teacher. A micro with suitable peripherals and some real time processing should provide an adequate system.

For its distant students at home, a centre of learning usually supplies academic material and the opportunity for occasional tutorials. An already successful example is the Open University which operates through the varied resources of radio and television, mail, online computer access, and telephone. Other institutions, colleges and polytechnics are following suit, and it is here that microelectronics is likely to make new circuits and break new ground.

Pre-recorded audiovisual teaching material will be sent to the student at home for use on his own domestic recorder, TV and video sets. Access to micros by then should be so common that computer programs could be sent via telephone line or radio to provide an instant home library.

Telephones will play an increasingly important part. Group tutorials with students all linked in to one teacher so that no-one needs to travel are likely to be in vogue. (It is a moot point whether anyone will be able to afford a rail journey or a telephone call by then.)

Graphics to illustrate a thorny point may be displayed on the television screen — slow scan transmission of pictures within the telephone network bandwidth is even now under development.

It is fairly well accepted that an educational system reflects, but lags behind, its current society. Our system was set up about 100 years ago to serve a simple, industrial society. This has changed over the last quarter-century from a mechanically based to an electronic technology; and from a goods-producing economy to a service society, relying more on flow of information than of molten metal.

Two important points surface for education. Firstly, that information will be on tap at home and available independently of the institutions. Secondly, that via microelectronics we all experience a whole spectrum of lifestyles and conditions, not only the ones we were born into. Knowledge is all around, just waiting to be plucked off the tree and consumed.

While formal school for children and adolescents will probably remain of much the same pattern but tarted up with some electronic aids, the prospect for higher and adult education is much more open.

In fact, the Council for Educational Technology for the UK believes that education is slowly evolving to meet the new needs, with a concept called Open Learning Networks, which with the thought in mind of life-long education in an automated society, the Council is actively encouraging.

Open Learning is just what it implies — information available everywhere, in all forms, from which the consumer can pick and choose. Indefinitely pliable, it is suited to the needs of the student, and might range from dipping into a TV documentary, to industrial or commercial retraining. A whole network of sources taken from books, television, radio, videotex, hobby groups, freelance tutors, computer centres, correspondence courses, and of course classes, are loosely combined in a learning web; co-ordinated probably by an area centre — a unique study programme administered in a unique way.

Open Learning Networks are not just a futuristic dream. The CET is on record as detailing the technological requirements, and states that rudimentary networks are already appearing in other countries.

OP SPOT

by Paul Fisher

This week we take a look at salary surveys – a vital factor whether you want to limit or increase pay rates

Join the salary information 'club' – it will boost your bargaining ability

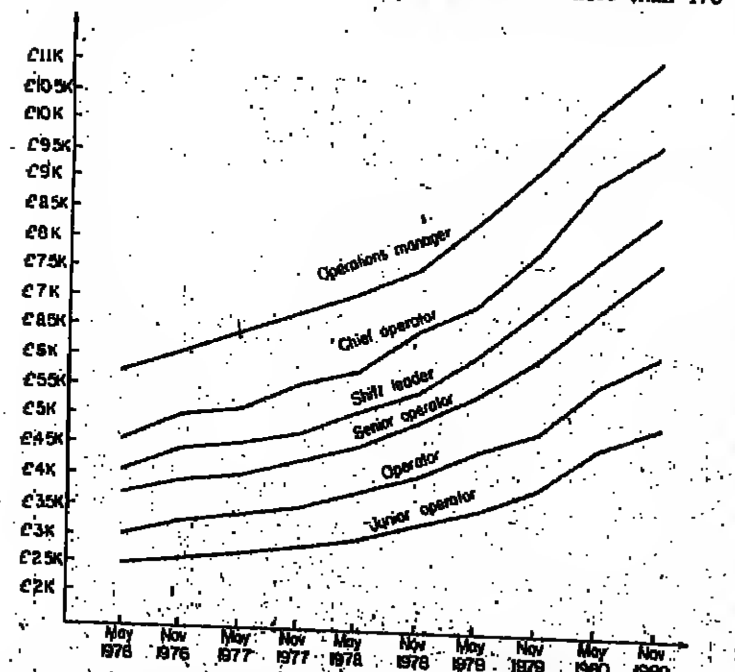
APPROXIMATELY 99% of people who turn up for work do so for the money. There are those who would dispute the figure and ask where it came from (I made it up) and they would perhaps claim that its presentation is a distortion as it fails to account for job satisfaction, habit and so on. Nonetheless, the cliche, "I'm in it for the money", generally holds true . . . for some 99% of the working population.

And a statistic is born.

There are undeniable problems in the gathering and the presentation of statistics, but both management and workers rely on them in the continuing jostle over salaries. The more you know about what other people earn (and the surer you are of that knowledge), the stronger your bargaining position. It's as simple as that, and remains the case whether you want to limit pay rises or to increase them.

	SAMPLE SIZE (installations)	PAY 1980
Computer Users' Year Book	1,433	£4,111
Reward Regional Surveys	132	£4,031
Computer Economics	572	£6,008

Table 1: Take your pick.



This graph indicates the way average salaries in operations have risen since 1976. Published by courtesy of Computer Economics Ltd. It must be emphasised that average figures tend to be higher than median because they are distorted upwards by atypically high salaries.

One of the most exhaustive studies on DP salaries is published twice yearly, in May and November, by Computer Economics (CEL) of Kingston, Surrey. The detailed results never become widely known because they are issued only to paying participants.

The surveys are described by CEL as a "service to management" and I was given a copy on condition that nothing would be reprinted without permission. Copies are not put on sale and a trade union, for instance, would have difficulty in obtaining one.

Some participating companies show survey results to their employees, others do not.

Installations employing up to 25 people pay an annual fee of £162 to join the "salary information club". Installations with more than 176 employees pay £380. For that they receive six monthly reports with contents including a breakdown of DP salaries in terms of a distribution showing minimum, lower quartile, median, upper quartile, upper octile, maximum and average and the size of the sample using basic annual salary and total annual earnings; percentage changes of earnings over six and 12 months; labour turnover; earnings analysis against experience and age.

The jargon word quartile refers to a point in an ascending tabulation of salaries at which, in the case of the lower quartile, exactly a quarter of the salaries are lower. The upper octile is the point at which 87.5% of the salaries are lower. The median salary figure is the one where half the salaries are higher and half lower. Quartiles, octiles and medians give a truer generalisation of salary scales than does an average figure.

Figures are often misleading – you have to know in the first place what you are asking for. Your average Martian wanting to land his spaceship might ask for the average height of the world's mountains. Your average statistician would be able to give an answer. He could give a median figure too, but it wouldn't help the Martian attempting a first landing on the top of Everest.

Similarly with salary statistics, even when what is wanted is precisely known, it is difficult to move from the general to the particular.

CEL's figures are arrived at by personnel departments filling in a form which is subsequently processed on a bureau 370/145. For first-time participants the form-filling is obviously a lengthy process. However, once the information is lodged in CEL's database, the next form to be filled comprises a printout of the previous form for a six-month update.

CEL is at pains to stress that data is secure saying: "The output is designed to prevent any company being identified with any particular detail of information." The input is coded.

Last November's survey covered 572 installations with 36,661 individuals on a database which was over 95% constant. The graph shows what has happened to operations total annual earnings according to the results of CEL's last ten surveys.

Since the beginning of the year Op Spot has quoted three figures as being an average or median UK operators' salary (with all the extras). As Robert Grant, editorial director of Computer Users Year Book, pointed out to me: "It is important that the pertinent facts are revealed when salary surveys are compared. Although bigger does not necessarily mean better, it seems to me that your readers would be better served if the pertinent facts were revealed so that they could judge the credibility and value of a particular survey."

Anyway, the figures with sample size and source are shown in Table 1. All have been gathered in the past year and, to the best of my knowledge, were gathered in good faith. They are certainly worth repeating.

Of the three sets of statistics, when seen in total, CEL's appear to be the most thorough. It is a shame, from non-management's point of view, that CEL's method of collecting its data restricts access. The results represent a powerful (and it has to be admitted inflationary) bargaining device.

Figures, like facts, should be approached with caution and cynicism – but they are often all there is to cling to.

This is a man to count on – he may be counting you. Peter Stevens works at Computer Economics compiling six-monthly DP salary surveys. His marshalling of salary statistics on more than 35,000 mainframe computer people made him something of an authority on matters concerning ops. His reveals CEL's findings on labour turnover, overtime and shift working plus evolution of job categories will be featured in Op Spot over the coming weeks.

Wespac's weeny Best of British gift for buyers of its ribbons.

Getting patriotism taped

THE Charles and Di sale has begun and much cash will change hands. Shares of breweries, flagmakers, hotel chains and china companies have already risen in anticipation of a flurry of patriotic purchasing.

The royal father used to travel the land urging us to buy British, a piece of advice which has remained largely ignored in the computer trade. However, the appeal to our patriotic values, as well as to strictly monetary values, is one made from time to time by various manufacturers.

Take Wespac, for instance. It is a British-owned company from London's East End which makes ribbons for all types of computers. Purchasers of 12 of its computer printer ribbons or 24 of its cassette ribbons are promised a free Mini Metro or Rover or TR7.

So far, so British – but the catch is that these cars are smaller than your average roll of printer ribbon, limiting the appeal of the offer to ops managers with seven-year-old children or to seven-year-old ops managers.

The toy cars, too, come from a British-owned company, Mettoy Playcraft, although some of its manufacturing is contracted to Hong Kong.

Back to Wespac, because it plugs the British bit further by saying: "The Wespac ribbon reconditioning service saves the UK thousands of pounds each year by refurbishing used ribbons for government departments, public utilities and a vast range of commercial and industrial concerns." Perhaps it has earned an invite to the royal wedding.

Wespac says it is "proud to be British", and there is no reason to doubt the words.

We may groan at the ... and the hype surrounding the royal wedding (and some ... are actually enjoying it) ... of us have at least a touch of patriotism.

A distinction should be made at this point, one which is ... valid for tub-thumpers and ... and that is the distinction between patriotism and nationalism. The two should not be confused.

Patriotism is the love of the ... you live in whether you were ... in that land or not. Nationalism is more aggressive and a ... claims a natural superiority ... provides an excuse for all sorts of ... pleasant behaviour, whereas patriotism is a good excuse for celebration and can be used to ... a product as well.

Computer firms at Premier's reception

REPRESENTATIVES of the computer and related industries were offered encouragement from the government in the shape of a reception held at 10 Downing Street recently.

Managers and employees from 36 of Britain's most successful small and medium-sized companies attended the Government's Reception for Enterprise, and guests included CTL, Xionics, Remek Automation, ICS, and Communication Studies and Planning.

Recommendations for attendance at the reception were made by regional Department of Industry offices, and there were about 150 guests.

Government representatives included the Industry Secretary Sir Keith Joseph and Secretary of State for Employment John Biffen.

The reception was the first where both heads of companies and employees were invited to attend. The object was to encourage a dialogue between government and small and medium-sized companies.

Those on the guest list were "the more successful companies who have shown an innovative spirit and enterpreneurial skill", according to a Downing Street spokesman.

At the Government's Reception for Enterprise, left to right: Kenneth Baker MP Minister of State, DoI, Keith Miller of Xionics and Tony Davies of CTL.

Restructure at Philips

PLANS to bring Philips under a central management system – which led to the formation of Philips Business Systems last year – have been taken a stage further with the reorganisation of the Business Systems Group's low-end business computer marketing and distribution activities.

The Group's Office Computer Systems operation (OCS), has been merged with the Business Equipment division where Geoff Hoddinott, former divisional director of the Small Business Computer division, has been appointed deputy director. Director of the OCS/Business Equipment merger will be Reg Parry.

Eurfyl ap Gwilym, former commercial manager of the Small Business Computer division, is now general manager responsible for the direct sales activities of OCS.

The Small Business Computer operation (SBC) has become part of the Data Processing division. Peter Cox, previously regional manager of SBC becomes general manager, reporting to Tony Nevison.

BCS postpones symposium

INSUFFICIENT registrations have led to the postponement of Computing for National Development, a symposium arranged by the BCS Specialist Group for Developing Countries, which was scheduled for March 23-27.

Bibliographies prepared for the main themes of the use of computing in agriculture, transportation, water management and finance will be published with a compendium of the major papers.

The BCS plans to incorporate the concepts of the Symposium into the activities planned for 1982, to mark the 25th anniversary of the founding of the Society. Any queries should be directed to Ian Shearer, c/o British Computer Society, 13 Mansfield Street, London W1M 0BP. Tel: 01-992 2860.

■ Alan Barker has been appointed software design engineer at van Rietschoten and Houwens (UK). He joins the company from Redifon Flight Simulation.

■ Bryan Daly has left Capex Computer Products to join the sales team at Value Computing.

■ Bill Pye has been appointed technical director at Microdata Synamics. He was previously in the marketing division at Johnsons.

■ Alex Bieber has been appointed head of Memorex's European OEM organisation. He joined the company in October 1980 as OEM director for Europe.

■ Steve Gill has become managing director of Microdata Synamics, the new systems software company based in Mayfair. Before founding the company, Gill was responsible for the launch of Apex for Johnsons, where he was marketing manager.

DP industry keeps in trim

NEVER let it be said that computer users are an unfit bunch. Computastars has its highest number of entries for three years this year, and the organiser of the Wright Line Squash Tournament, the Carter-Parratt Group, reports a "staggering" 512 team entries for this year's competition.

The tournament teams consist of employees of data processing or accounts departments, including one team member of managerial status. Entries from all over the UK have been divided into 12 regions. The finals will be played in January next year.

The next round is to be played at the Hitbercroft Squash Club in Wallingford, Oxford between County Computer and MC Computers Ltd at 10.30 a.m. on March 14.

■ David Cliffe, former computer sales executive at Ventek has been promoted to product manager.

■ Eleanor Hoh has joined Metrotech Management Technology as marketing support representative. She was formerly with ICL.

■ Ken Ramsey has been appointed applications product marketing manager at the business computer division of CTL. He was previously systems development manager with Tymshare.

■ Derek Jennings has moved from systems and programming manager to general manager at Sirius B Computer Systems. He joined the company in 1977.

■ Ron Beadie has joined Vaughan Systems and Programming as system specialist. He was formerly concerned with flight information systems at the British Airports Authority.

■ Robert Hallam and Peter Darby have been appointed directors at Feni Data Services. Hallam becomes operations director. He has been with the company for eight years, the past five as operations manager. Darby is financial director and joins Feni from within the Sunlight Service Group, of which Feni is a member. He served the group most recently as group financial accountant.

■ John Douglas has been appointed support consultant at Computer Automation. Before joining the company he spent 12 years with Lucas as systems manager for Girling parts and service.

DIARY

MARCH 14
Finals of school management game. BCS Belfast. ICS Computing, Belfast. Sponsored by Ulster Bank.

MARCH 17
Meeting. Wang VS Users Group. Nestle, St Georges House, Croydon. Details (0202) 29111 ext 201.

MARCH 18
Why the DPM needs standards and how. IDPM. Pearl and Dean Studio, 15 Broadwick Street, London. 6.00.

MARCH 19
CMC 5000 Series Sub Group meeting. CAA., Aviation House, Holborn. 10.00.

MARCH 24-27
Computex Ireland. SDL Exhibitions. Leopardstown Exhibition Centre, Dublin.

MARCH 25
CMC Reality Sub Group meeting. Gestetner Ltd, Euston Road, London. 10.00.

MARCH 25-26
Data logging teach-in. MC Computers Ltd. MC Computers, Newbury Engineering Facilities. Details from Steve Metcalfe on (0635) 44967. 10.00.

APRIL 7
Meeting. Gino Users Group. Computer Centre, Mathematics Building, Bristol University. 10.15

APRIL 9
Meeting. IBM Guide Set Group. IBM, Basinghall Street, London EC2. Details Alan Peck, tel: 01-828 8104.

APRIL 14-16
Second London Computer Fair. Association of London Computer Clubs. North London Polytechnic. Details 01-607 2789.

APRIL 29
Experience with new database products. BSC Database Specialist Group. Room G6, New Engineering Block, University College London. 200.

MAY 20
Has the operation team a future: IDPM. Pearl and Dean Studio, 15 Broadwick Street, London.

JUNE 1-3
Conference. Datamanager User Group. Copenhagen. Details 01-486 3947.

JUNE 17
Database design. IDPM. Pearl and Dean Studio, 15 Broadwick Street, London.

CONFERENCES

■ Compatibility with IBM's SNA is the theme of a seminar and workshop to be held at the Churchill Hotel, London, from March 17-20. It is organised by the Californian firm Telecom Computer Technology (TCT). The event sets out to achieve a user oriented assessment of how IBM-compatible devices and networks may be used in the SNA environment. Emphasis will be on providing a safe route into SNA to yield improved performance and reduced cost. For further information contact Fiona Winn or Annie Gregory on 01-948 3111.

■ Many engineering techniques now depend on computers. The civil and structural engineer uses the computer as a tool to calculate stress and displacement caused by loading, while the manufacturing engineer uses it as a controller. Microcomputers and microprocessors are predicted to have an even greater impact on engineering design and techniques of the future. An international conference on Engineering Software will take as its theme the impact of microcomputer systems. It will be held at the Imperial College of Science and Technology in London from March 24-26. Conference fee is £65 daily or £135 for three days, exclusive of VAT. Details from the organiser, Engsoft, Computational Mechanics Centre, 125 High Street, Southampton SO1 0AA. Tel: (0703) 21397.

DATA ANALYSIS

Mapping results into a system design

Section II – Part I

of our series describing a system design methodology

by Rosemary Rock-Evans

This week we begin the second, shorter section of our series. The emphasis has been on analysis, because it is a neglected art; the remaining seven parts are about design, and have deliberately been made broader in scope.

TO consider all aspects of application design could take a series of its own. This one article will concentrate on the aspects which involve mapping the results of functional analysis into a system design.

The analysis stages produced several outputs: function hierarchies and a function network; an entity model (and accompanying forms); a data flow diagram for each level in each function hierarchy; entity life cycles and matrices; functional models and access path analysis forms.

The design phase involves two main tasks: database design and application design.

Database design uses the entity model and access path forms, attribute forms, etc, and will be discussed in the next article.

Application design uses the function networks, data flow diagrams and entity life cycle matrices.

In the article on function networks, it was shown that each level in the network could be translated into a data flow diagram, which represented the area under study. There are three steps to transforming this generalised picture into a picture which defines a proposed computer system, two of which occur in the early stages of a project.

Firstly, the data flow diagram which provides the necessary level of detail is chosen and the domain of change is shown. The domain of change is the area which will be affected by the change in the existing system. It will thus include areas which will not necessarily be computerised. This area is chosen by the user. It may already have been specified in the terms of reference, but in many cases the area is not precisely defined and the data flow diagram can be used to fix the boundary in a more positive way. This is shown in Figure 1.

The second stage is completed before any detailed analysis is started and establishes which functions are likely to be computerised. The main steps are as follows:

● Cluster analysis of the functions is performed in order to identify clumps or groups of functions which are candidate systems or sub-systems. These are chosen on the basis of having a minimum of interaction or coupling with other functions.

● The user priorities and potential benefits, e.g. political (prestige), personnel savings, for computer support of functions is considered on a broad basis, along with costs such as training, conversion, and so on.

● The function hierarchies are examined to ensure that the functions which are potentially capable of computerisation do not include sub-functions which are not, or sub-functions which may reduce the benefits.

● The entity model is examined to see where the logical dependencies override any possible groupings of functions thus far established.

● The data flow diagrams are examined to show where time dependencies override any possible groupings of functions.

The result is a series of alternative solutions which are broadly listed out in terms of costs and benefits.

In Figure 5, a much simplified example using data flow diagrams is used to demonstrate the effect.

The user then chooses which solution is best suited to his requirements and the result is an application development strategy, broadly defining the area of computerisation.

The area of computerisation can be shown as a data flow diagram (see example, Figure 2). This was the stage reached in the article on function networks when the systems boundary was drawn.

A level in the function hierarchy is chosen so that a computerised function contains no non-computerised functions and a non-computerised function contains no computerised functions.

In Figure 3, the simple household management example has been used to show this level. This may be termed the first level of mechanisation.

The functions at this level are then regrouped into computer and non-computer functions.

It may not at first be obvious why this is necessary, but an examination of the household management example will show why.

In Figure 3, the function hierarchy has been expanded to include an extra function: "providing accommodation". As can be seen, at the bottom level a common function occurs: "boil water". If a data flow diagram had been drawn at this level in the hierarchy, it would have had the appearance in Figure 4. The computerisation of the "make tea" function, however may only have affected the "boil water" function within the "make tea" hierarchy. The "boil water" function in the "providing beds" hierarchy may be done quite differently. Thus circling the area of computerisation at this level produces completely the wrong effect, as it imposes the constraint that every time we want to "boil water", it has to be done via the robot.

Thus the solution has to be to regroup the function hierarchies into computer and non-computer areas, and redraw the data flow diagrams to show in input and output necessary once the regrouping into the higher-level system function has been made. This is what is shown in Figure 2.

The Third Stage occurs after detailed analysis, and establishes the scope of the design phase. The functions are examined in much greater detail and the following steps completed:

● The possible mechanisms capable of supporting the functions are identified (mechanisms are defined later in this article).

● The frequency of functions is quantified.

● The functions are filtered, based on the costs of the mechanisms, the frequency, costs of conversion, and so on.

The result is a business system specification which provides the cost and benefit of various solutions based on the results of filtering the functions.

Once a solution has been chosen by the user, the data flow diagrams can again be redrawn (for the reasons specified in the last section) and the actual areas of computerisation can be shown as a data flow diagram with the inputs and outputs required clearly specified and the areas outside the system shown to indicate the impact on the user area.

Both the second and third stages in application design involve deciding the mechanisms by which the functions are to be implemented.

The second stage described which functions were to be computerised and which were not, and the third stage described these mechanisms in more detail.

It may be remembered that a function was defined as what the business did, but with no mention of who performed the function, what form the input and output look, e.g. the forms or documents which could be used, how the taks should be implemented, or whether it should be performed clerically or manually, computerised or done by machine.

A mechanism is the means by which a function is implemented.

It takes into account both the "how" aspect of implementation i.e. computer, manual/clerical, machine, and the "what" aspect i.e. forms design, reports required etc.

The management services area has been very industrious in thinking up symbols to represent mechanisms. In Figures 6 and 7 some of these symbols are shown.

The study of mechanisms thus involves selecting from those available the best mechanism to support a function, and the best mechanisms to support the input and output of a function, based on function cost, frequency, response required (online vs batch) etc.

Obviously, in many cases the input and output will be the database or files in the system and mechanisms are borne in mind during the database design phase.

Where a man/machine boundary occurs, however, the input and output will be implemented via for instance, a line printer, a VDU or key edit equipment. Furthermore, the clerical system needed to support the computer system must be designed, making necessary a further study into the input forms needed and procedures required in the domain of change.

Thus after the third stage of application design the mechanisms will have been decided and all the information will be available ready for design, almost to the extent where the mechanisms can be sketched in on the man/machine boundary, at least, using the symbols shown.

After detailed analysis, all the information should be available to start application system design.

● The entity life cycles and matrices provide the information needed for transaction design.

● The study of mechanisms provides the information needed to begin program design (using the function descriptions and network) and to start to design the input and output to the system e.g. dialogue design, screen layout design etc.

● The area of computerisation shows the scope of the system, the man/machine boundaries and the dependencies in the system, which can be used in program and job design.

In the next article aspects of database design will be considered showing how the results of functional analysis can be used to design an efficient logical database.

Some of the ideas and terms in this article have been extracted from Tom De Marco's book Structured Analysis and Systems Specification.

The Data Analysis methodology was developed at CACI by Ian Palmer.

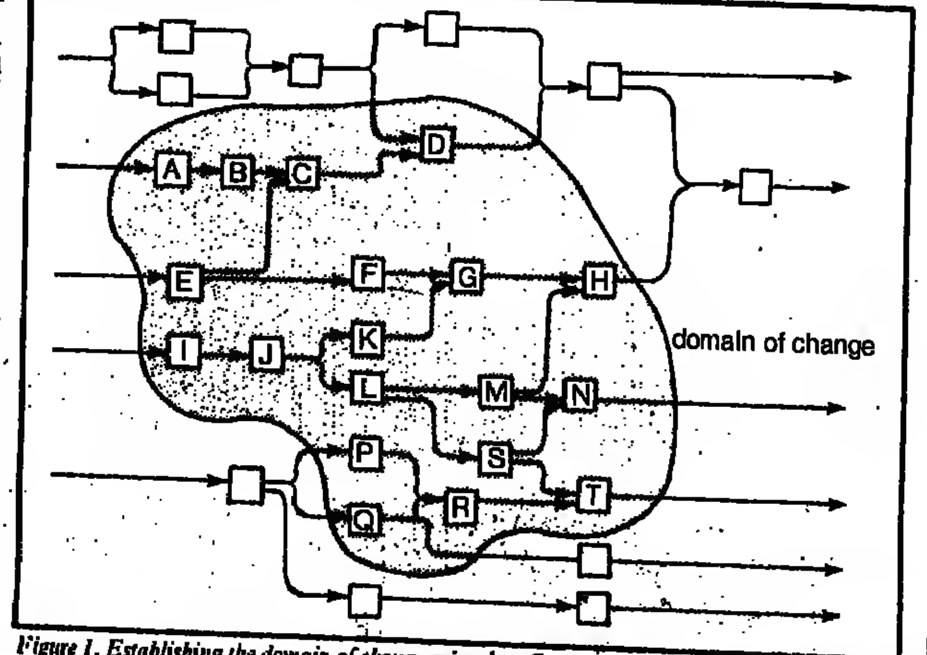


Figure 1. Establishing the domain of change using data flow diagrams.

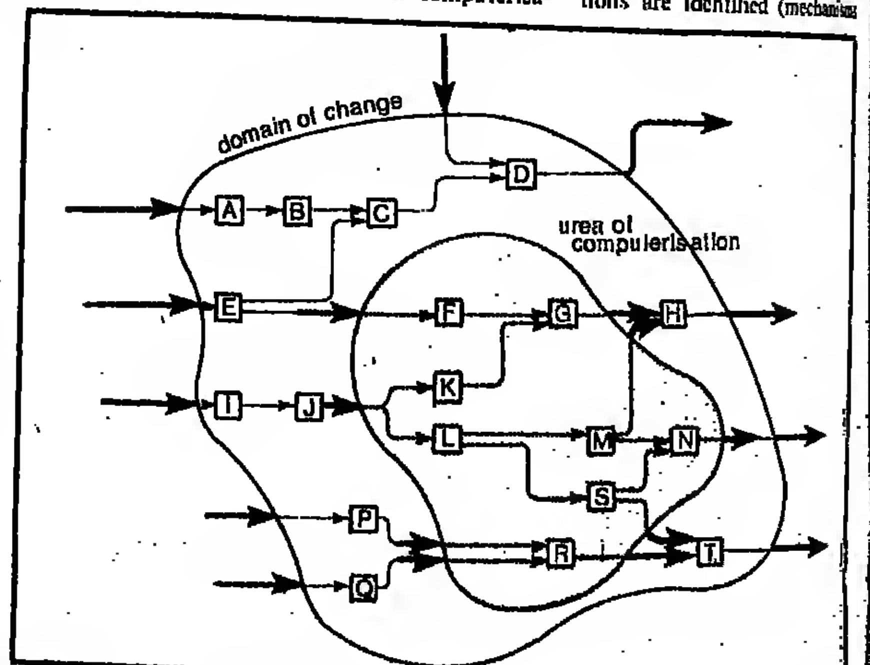


Figure 2.

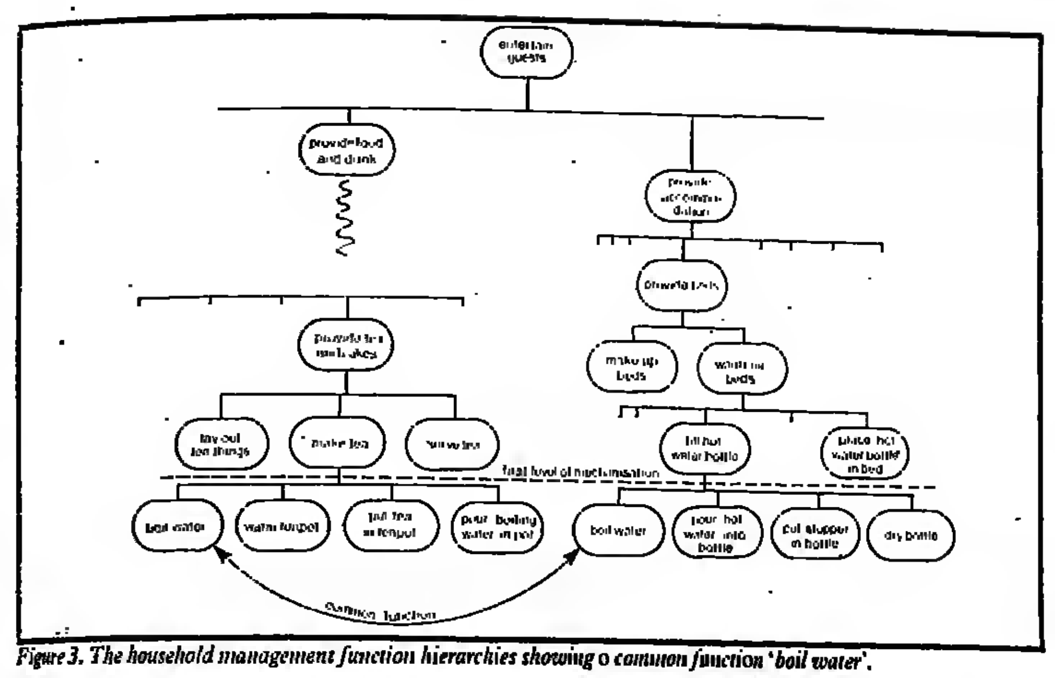
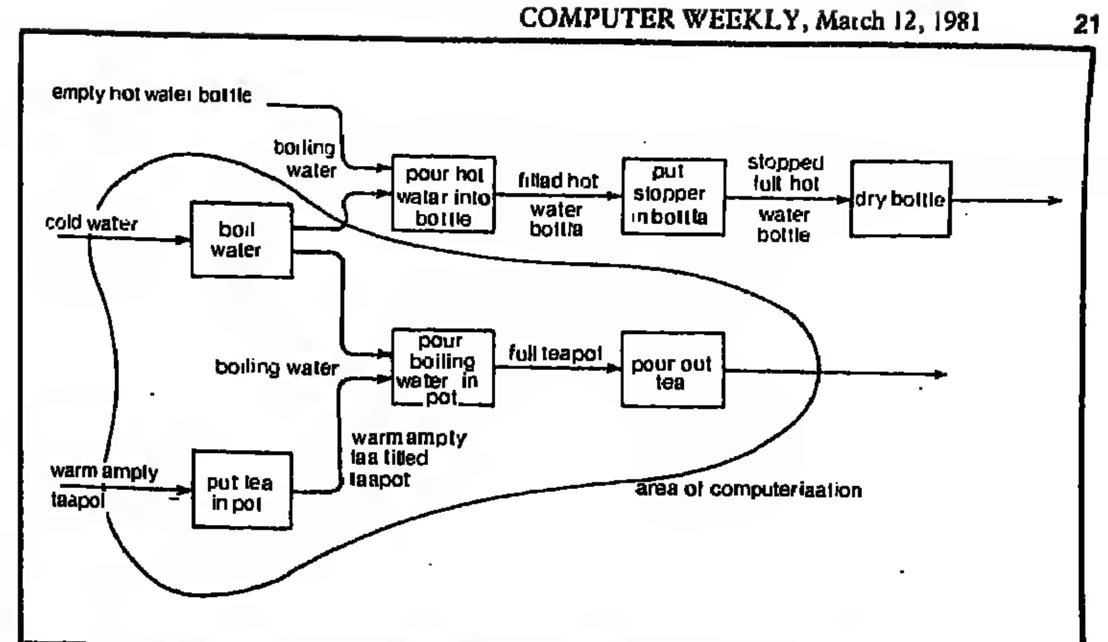


Figure 3. The household management function hierarchies showing a common function 'boil water'.



empty hot water bottle
boiling water
pour hot water into bottle
filled hot water bottle
put stopper in bottle
stopped full hot water bottle
dry bottle
cold water
boil water
boiling water
pour boiling water in pot
full teapot
pour out tea
warm empty tea filled teapot
warm empty teapot
put tea in pot
area of computerisation

Figure 4. Effect of establishing area of computerisation around common function 'boil water'.

All the information for application design

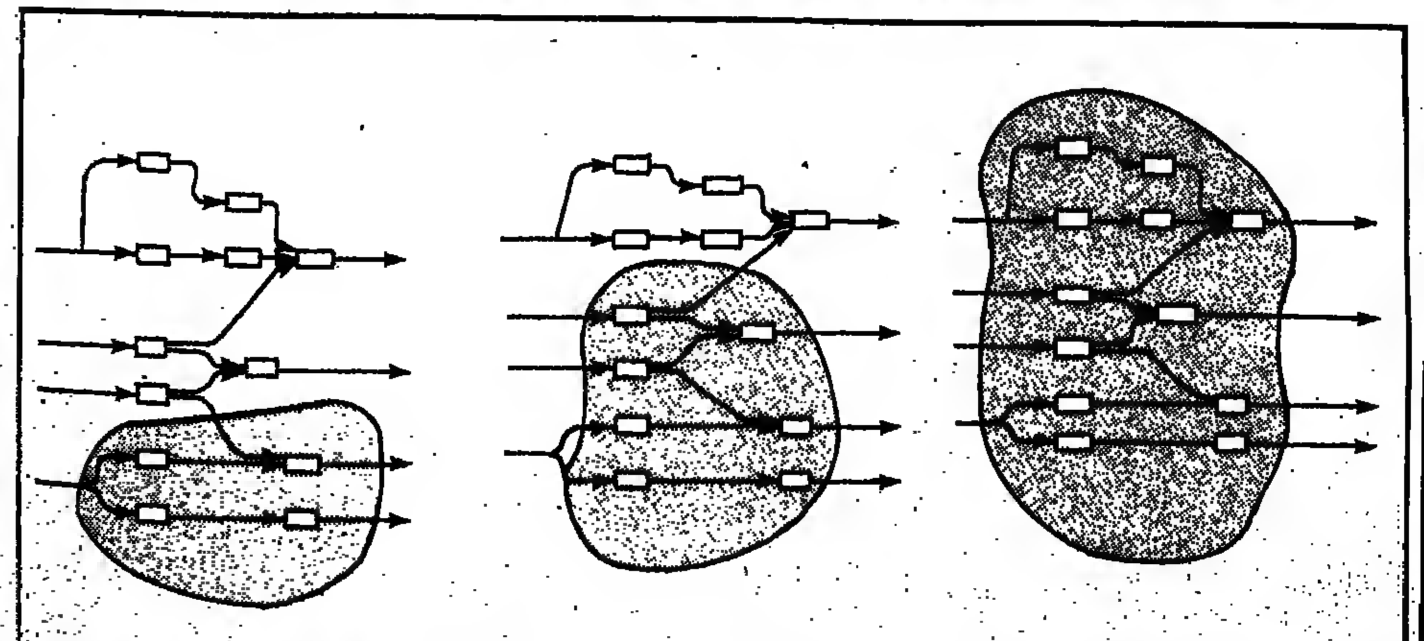
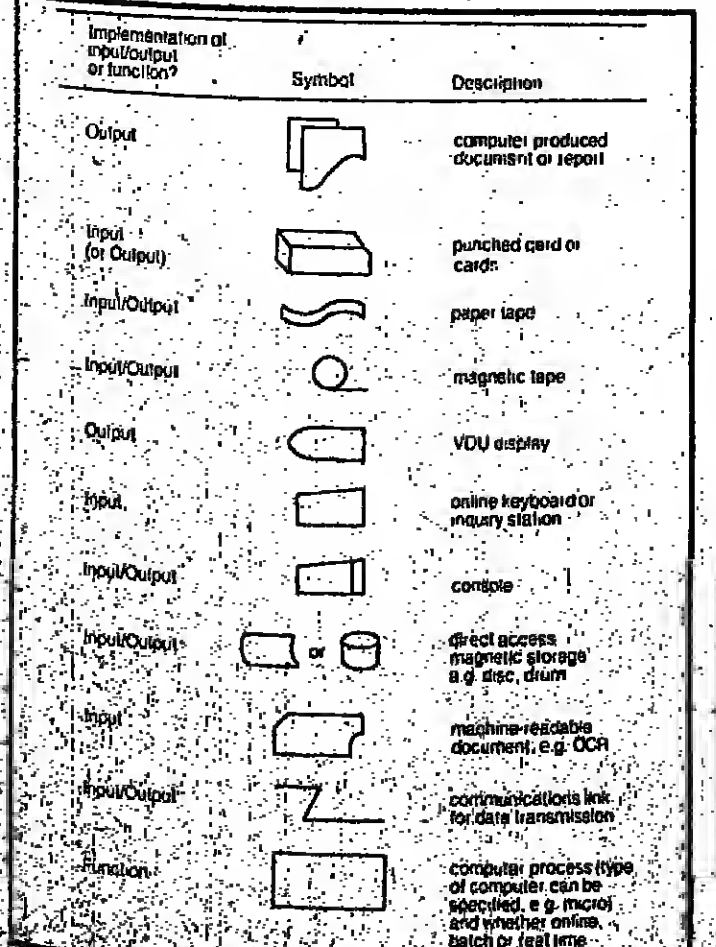
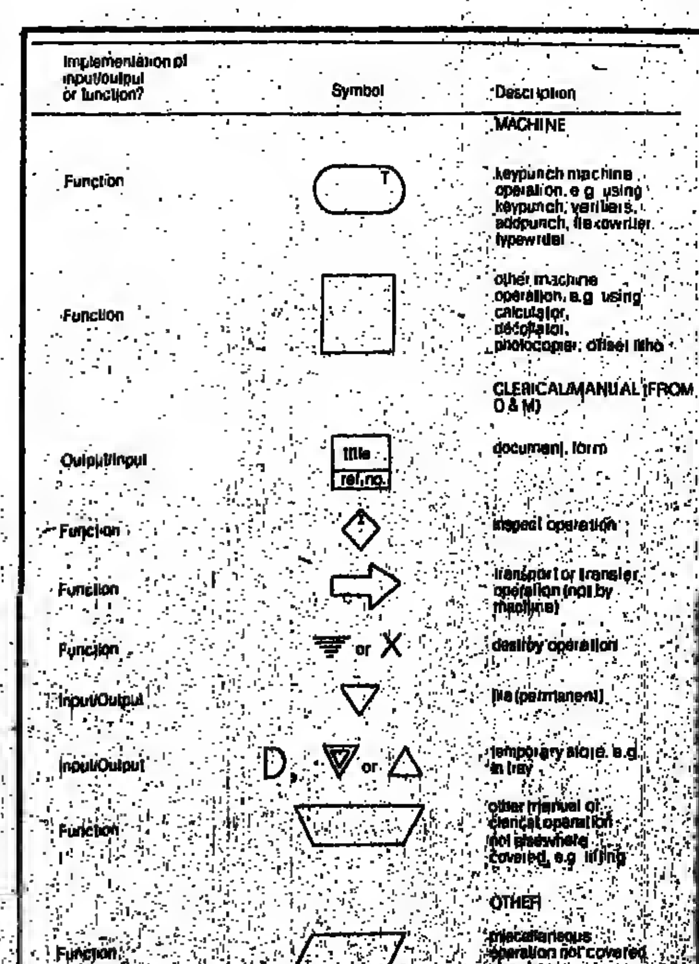


Figure 5. Comparison of different systems.



Implementation of input/output or function?
Symbol
Description
Output
computer produced document or report
Input (or Output)
punched card or cards
Input/Output
paper tape
Input/Output
magnetic tape
Output
VDU display
Input
online keyboard or inquiry station
Input/Output
console
Input/Output
direct access magnetic storage e.g. disc, drum
Input
machine-readable document, e.g. OCR
Input/Output
communications link for data transmission
Function
computer process (type of computer can be specified, e.g. micro) and whether online, batch or real time process

Figure 6. Symbols used to represent computer mechanisms.



Implementation of input/output or function?
Symbol
Description
MACHINE
Function
keypunch machine operation, e.g. using keypunch, verifiers, addpunch, flexowriter typewriter
Function
other machine operation, e.g. using calculator, decollator, photocopier, offset litho
CLERICAL/MANUAL (FROM O & M)
Output/Input
title
ref. no.
document, form
Function
inspect operation
Function
transport or transfer operation (not by machine)
Function
or
destroy operation
Input/Output
file (permanent)
Input/Output
or
temporary store, e.g. in tray
Function
other manual or clerical operation not elsewhere covered, e.g. lifting
OTHER
Function
miscellaneous operation not covered elsewhere

Figure 7. Symbols used to represent non-computer mechanisms.

Joseph Kelly explains why the American computer community is looking fearfully over its shoulder . . .

Japanese 'invasion' gives the US a bad case of nerves

THE American business community is looking fearfully over its shoulder. Japanese manufacturers are hot on their heels in yet another industry that Americans once considered their own: computers.

By most accounts, 1980 was a successful year for the Japanese computer industry. For the first time, a Japanese computer manufacturer, Fujitsu, outsold IBM Japan, the wholly-owned subsidiary of the American industry leader. Fujitsu also inked an agreement with TRW Corp, an American conglomerate, to establish a $100 million joint venture that will sell Japanese data processing hardware in the US.

Nor was Fujitsu the only Japanese challenger of US supremacy. Both Hitachi and Nippon Electric Company (NEC), two of Fujitsu's competitors at home, unveiled machines comparable in performance to IBM's latest big computer, the 3081.

In less than 15 years, the Japanese have created a competitive $4.5 billion industry with four mainframe manufacturers: Fujitsu, Hitachi, NEC and Mitsubishi. In addition, Japan has some 300 other computer manufacturers, which make everthing from peripherals for the OEM markets to stand-alone small business systems.

Starting later and smaller than any advanced European nation, Japan's computer market is now the world's second largest, exceeded in size and vitality only by that of the US.

All of this has Americans worried. Concern over the Japanese competition has become a staple of virtually any discussion of the future of the American computer business — if not the fate of all American industry. It is difficult to separate what is real from what may simply be a bad case of nerves.

Depending on who is talking, Japan either possesses faultless business acumen or, alternatively, has by some means exposed all the shortcomings of the US economy.

While American labour is called to task for stagnant productivity and rising costs, Japanese workers are being lauded for co-operation on the assembly line and undemanding conduct at the bargaining table. While American semiconductor manufacturers suffer sharp criticism for their high defect rates, their Japanese counterparts are praised by customers in the US for the consistent reliability of their semiconductor chips.

No typical discussion of the Japanese computer phenomenon is ever complete without a citation of the role played by the Japanese government, with its research subsidies and protective tariffs.

> By 1990 the Japanese will have a share of the American computer market comparable to the 20 per cent they now have in automobiles.

The US, by contrast, is said to have an ill-focused industrial programme, discouraging tax policies and cumbersome regulations . . . plus the US v IBM anti-trust suit.

As Charles Sporck, president of National Semiconductor Corp, has said, "It is almost incomprehensible that IBM, which is probably the nation's most important industrial asset, is under attack by the US government for being too successful. Can you imagine the same action being taken in Japan?"

IBM, for its part, does not miss any opportunity to use the threat of Japanese competition for its own purposes. At the anti-trust trial in New York, where the US Department of Justice is suing to divide the company into several smaller businesses, IBM produced as a witness Henry Rosovsky, dean of the faculty at Harvard and an expert on the Japanese economy.

Rosovsky told the court that by 1990 the Japanese would gain a share of the American computer market comparable to the 20 per cent they now have in automobiles.

If Rosovsky's prediction comes true, Japan will have captured a market share as large as that now held by all of IBM's mainframe rivals combined.

By itself, Rosovsky's forecast might be subject to criticism. While IBM thought the Harvard dean's testimony was worth a fee of $13,000 to $14,000, the academic conceded during examination that he had never made a careful study of trends in the data processing industry.

Rosovsky, however, is hardly alone in his opinions.

For more than ten years, there have been authoritative warnings about the coming Japanese computer challenge, though these predictions have not all panned out. For example, in 1970 the National Research Council sponsored a study which concluded that Japan would reach parity with the US in software development by 1975. Today, most observers on both sides of the Pacific agree that the Japanese are still five to ten years behind the US in software.

The difficulty in obtaining a clear picture of the Japanese computer challenge is compounded by the sometimes confusing actions of the American business community. On one hand, IBM executives express concern over Japanese competition, while on the other they agree to market large numbers of Minolta copiers, providing yet another distribution channel for imported office equipment.

Simon Ramo, chairman of the board of the TRW-Fujitsu joint venture, has written a book, America's Technology Slip, diagnosing America's decline and offering some homegrown cures. At the same time, his company hopes to improve its data processing business by giving the Japanese more clout in the US.

In case after case, whether reasoned or opined, the myth of the terrible Japanese challenge is promoted by American computer industry executives . . . at least in public. But Ulric Weil, computer industry analyst at Morgan Stanley, the stockbrokers, is not sure how seriously these same executives take their own public statements.

When asked whether the US computer industry will lobby in favour of some kind of government help once the Reagan administration gets settled down in Washington, Weil said he "Doesn't think (the industry top brass) will make the case that strongly. For public relations reasons they might. But privately, they all say "We can handle it, and if we can't, it's our own fault."

This veiled optimism is due in part to the slowing growth of the Japanese computer industry. In the early 1970's, Japan's data processing business had a robust 25 per cent annual growth rate; today it is 15 per cent.

Further, in order to attain the economies of large-scale production that enable them to become competitive exporters of computer gear, the Japanese computer makers need to control their domestic markets. So far, they have not done this.

Fujitsu may have passed IBM Japan in sales this year, but just barely: $1.55 billion for Fujitsu to $1.54 billion for IBM Japan. And these numbers include Fujitsu's sales worldwide, while the revenues of IBM Japan are derived substantially from sales in that nation alone. IBM Japan's 1979 profits were nearly three times the earnings of Fujitsu for its fiscal year ended March 31, 1980.

In numbers of computers, IBM Japan is the leader, accounting for as much as 31 per cent of the 45,000 machines in Japan. Sperry Univac, NCR, Burroughs and other American vendors are estimated to control, together, another 14 per cent of the market.

Japan is the only foreign country where American manufacturers have less than half the local data processing business. This is testimony less to the strength of the Japanese companies than to the fiercely protectionist policies adopted by the nation's government. IBM Japan, which operates on a licence renewable every five years, is said to have agreed not to let its share of the market push the total foreign share above 50 per cent.

That may now be changing in light of both reduced tariffs on the part of the Japanese and plans by NCR, Burroughs and Data General to take advantage of the relaxed rules by expanding their production.

In spite of tariff barriers, IBM Japan has successfully kept the native manufacturers off balance in the same way that it has managed to stay on top of the American market. After IBM's introduction of the 370 series in the early 1970s, the Japanese manufacturers, supported by government research subsidies, fought back. Japan produced good machines, but they were not good enough to withstand the market tremors that came in the late Seventies. That was when IBM introduced the powerful 303X line and the smaller medium-size 4300 series. There were also price cuts on IBM's older models.

The announcements threw the Japanese market into turmoil, pitting domestic companies against each other in an orgy of competitive price cutting and forcing them to introduce new models before the product cycles on their older machines had run their course.

A shakeout followed. Two of the Japanese manufacturers, Oki Electric and Toshiba, abandoned their lines. Only Fujitsu and Hitachi were able to muddle through and come out with any kind of profit.

The topsy-turvy market in Japan was a mirror image of the unsettled conditions that greeted the Japanese companies making their first tentative forays into the American market, which was then reeling from the 4300s.

The Japanese reputation for good business judgment was tarnished by the spectacle of Hitachi signing with America's Itel to market large-scale machines from Japan. Just a few months after the deal was struck, Itel was forced out of the market, a victim of IBM's aggressive pricing of the 4300 series and its own business practices. Itel's 1979 losses, in the neighbourhood of $430 million, gave Hitachi an intimate connection into one of the most notable business disasters of recent times. (Hitachi is still building computers for the US market and selling them through National Semiconductor, formerly Itel's other computer supplier, which was left holding the bag when Itel fell apart.)

To date, the number of large computers sold in the US that were made in Japan or made using a high percentage of Japanese parts is small to the point of being insignificant. According to International Data Corp the total is fewer than 300. More than 4,000 machines of comparable size have been sold by IBM.

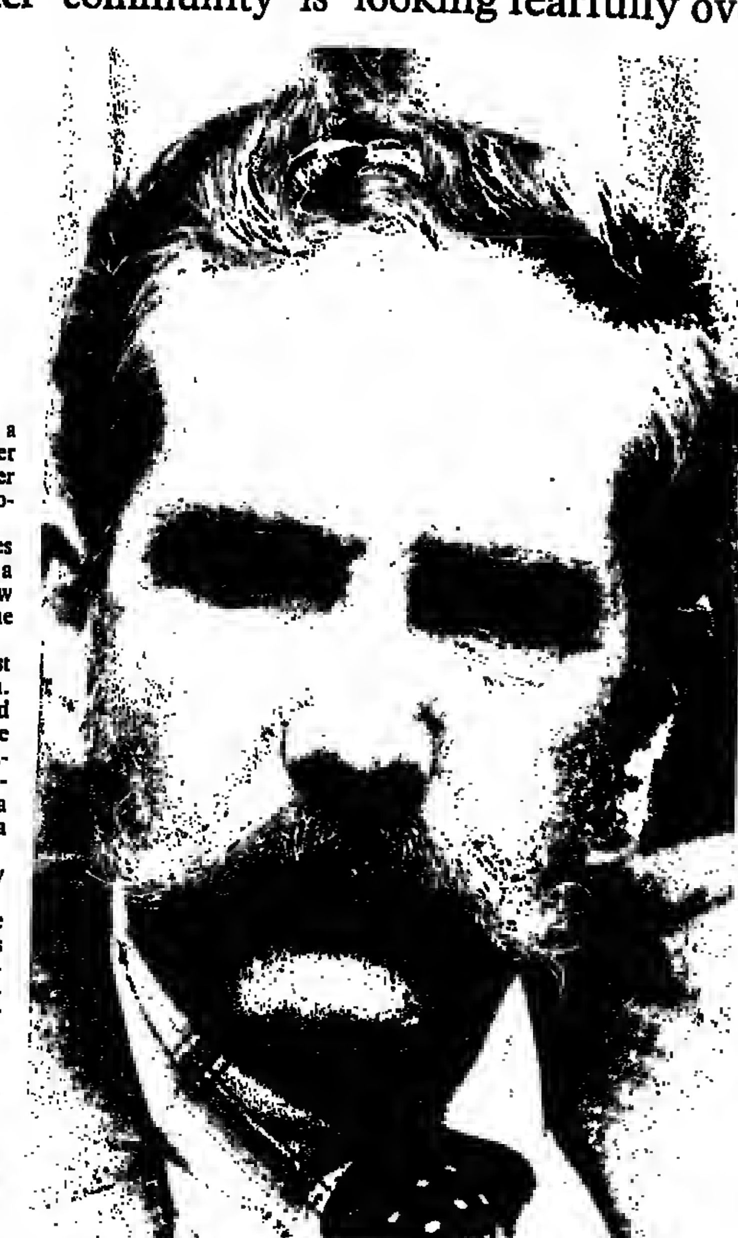
Two other Japanese companies, NEC and Mitsubishi, sidestepped the market for large machines, confining their American activities to the small business system market. They established wholly owned subsidiaries that sell their products through networks of equipment dealers, but remain vendors nevertheless.

> Most observers on both sides of the Atlantic agree that the Japanese are still five to ten years behind the US in software.

"The Japanese are still groping for an export strategy," says William Rapp, an investment banker who follows the Japanese market closely. "They are trying to pick up different channels of distribution in this country. The Itel saga shows that those channels can be vulnerable."

Even so, great fortunes have been made from more modest beginnings. The Japanese have clearly gained in experience from their early encounters with IBM. They show no sign of abandoning their national goal of increasing exports by nearly a third each year, with much of that earmarked for the US. But can they duplicate their earlier success in automobiles? The failure of the Japanese, so far, to control the computer business at home makes comparison difficult.

"In automobiles you had a stable technology and the Japanese had already fully exploited their own market," says Rapp. "You have a whole different competitive model now. You can't use automobiles, ships or textiles as a model."



CHARLES SPORCK, president of NatSemi . . . "It is almost incomprehensible that IBM, which is probably the nation's most important industrial asset, is under attack by the US government for being too successful. Can you imagine the same action being taken in Japan?"

Keith Jones meets the new chairman of the world's second biggest computer corporation, Michael Blumenthal

Burroughs favours Japan rather than UK for manufacturing expansion

BURROUGHS, the world's second biggest computer corporation, has been dogged by two serious weaknesses: a lack of forward planning and inferior customer support, but these faults are now being tackled. And the company plans major offensives in areas such as very low-cost commercial systems and the electronic office as well as continuing to address all its traditional market sectors.

These were some of the key points made last week by the new chairman of Burroughs, Michael Blumenthal, during a visit to London.

Blumenthal dismissed reports that a merger might take place between Burroughs and the Bendix Corp, of which he is a one-time chairman, despite Burroughs' disappointing financial results for 1980. Profits plummeted from $223 million in 1979 to $82 million and turnover increased by a trivial $71 million to $2,830 million.

> In 1980 many Burroughs plants suffered from indigestion due to less than perfect scheduling, in particular with the new 900 series.

Blumenthal, who toured Burroughs plants all over the world last year before assuming the chairmanship, told Computer Weekly that there were no plans to add new factories to the eight existing sites in the UK, the firm's biggest market outside the US.

But he revealed that he was talking to "UK government officials" about financial incentives for manufacturing expansion and would compare these with those offered by other European countries.

He is well used to government, having served as Secretary of the Treasury from January 1977 to August 1979 in the Carter administration.

Asked about the possibility of expansion in the UK or elsewhere in Europe by acquisition, Blumenthal described the acquisition approach as "no panacea". At the same time he was not "hung up" on any particular approach to expansion. His attitude was pragmatic.

While making more than 350 workers redundant at its factory at Cumbernauld in Scotland, Burroughs is keen to expand manufacturing in Japan. Blumenthal said that he visited the top ten computer manufacturers there recently to discuss the possibility of setting up a joint venture.

Blumenthal admitted that Burroughs might need to acquire certain technologies from outside if it wished to realise its ambitions in the office systems market. Digital switching technology would have to be acquired by acquisition, for example, if Burroughs wanted to make a "quantum jump" in the office systems area.

One recent move in the electronic sector highlighted by Blumenthal was the formation in January of a new Office Systems Group within Burroughs. It combines the products and operations of the former Office Automation Division of Burroughs with the Products Group of the Systems Development Corp, the big US services company bought by Burroughs for $98 million last year.

SDC is particularly active in the big text editing systems area. Burroughs already possesses facsimile technology and word processor expertise through its Redactron division.

Turning to Burroughs' customer support problems Blumenthal refused to comment on the hundreds of law suits filed in the US by users of the company's small business computers, including the B800, except to point out that there were thousands of satisfied B800 customers.

But he recognised that Burroughs had scored low marks compared with other suppliers for support in customer surveys. These include the survey of UK customers carried out last year jointly by Computer Weekly and Datapro.

Blumenthal commented, "These problems must be corrected for the sake of the company's image." He revealed that staff were being shifted from marketing into customer support and that a centre for controlling support resources was being set up in the UK in the Midlands in addition to similar centres in the US and Japan. The whole aim was to achieve a very short turnround in response to customer requirements.

He also referred to the six staging centres set up in the last quarter of 1980 for checking out new machines before they are shipped.

At the time of announcing its poor 1980 results Blumenthal said that these staging centres were the reason for the company's very modest turnover increase. They slowed the booking of sales.

Blumenthal added that in 1980 many Burroughs plants had suffered from "indigestion" due to "less than perfect scheduling", in particular with the new 900 series of small business machines. He added that the company was now "substantially out of the woods" with these production problems.

Blumenthal agreed with the view that Burroughs in the past had been too interested in continuing to make a profit on a quarter-to-quarter basis. The loss of nearly $69 million in the fourth quarter of 1980 — the main cause of the huge profit drop for the whole 12-month period — was the first for many years. It was the result of a $125 million write-off relating to obsolete and returned machines and Blumenthal stressed the necessity of making such a drastic move even though it might not have been palatable to shareholders.

> Staff are being shifted from marketing into customer support.

Blumenthal emphasised the need for Burroughs to invest for the future and pointed out that last September the company brought in Jerome Jacobson, described as a man with many years experience in strategic planning, to head up a new central planning activity.

Blumenthal thought that Burroughs' weakness in planning had led to its failure to maintain its dominant position at the bottom end of the commercial systems market, the market for machines priced between $10,000 and $20,000. But Burroughs intended to attack that market aggressively, helped by its huge existing customer base.

The company had no plans at the moment to enter the home and hobby market addressed by suppliers like Apple and Commodore, and there were no plans either to follow the lead of IBM and Xerox by opening retail outlets.

One major investment for the future highlighted by Blumenthal was the $80 million being put into its semiconductor facility in California at Rancho Bernardo near San Diego. It would concentrate on producing custom logic circuits for Burroughs computers. Another big spending area was applications software products development, the subject of an annual investment of $50 million.

Blumenthal was emphatic about Burroughs' intention to continue to compete at the top end of the mainframe market despite the dominance of IBM.

Asked if Burroughs was interested in joining the ranks of firms offering plug compatible alternatives to IBM machines, he said that this possibility had been the subject of internal studies by the company. But he added, "Burroughs has been successful because it has not been IBM compatible."

Blumenthal made no hint of any plans by Burroughs to expand significantly its sales activities in West Germany, a market where the company's presence is extremely modest compared with other major manufacturers.

BLUMENTHAL . . . Keen to expand in Japan

PRODUCTS – 1

Disc and tape for H-P desk-tops

A 12-MEGABYTE Winchester-technology disc and popular ANSI-standard half-inch tape drive will be on offer shortly for use with Hewlett-Packard's desk-top computers.

Formerly interfaced only to HP's 1000 and 3000 computer systems, these two storage devices can now be used simultaneously or separately on HP desk-top computers.

Four HP desk-tops are accommodated, the Series 9800 Systems 35A, 35B, 45B, and the colour 9800 System 45.

The HP 7910H is a table-top unit, ready for immediate operation when plugged into the desk-top computer and includes a built-in controller, enclosure, power supply, and HP-IB (IEEE-488) interconnect cable.

A sealed module contains the HP 7910H head, magnetic disc, and actuator; failures arising from the improper installation of removable media or the introduction of contaminants are thus effectively eliminated.

This configuration is said to be suitable for use in unfavourable environments while built-in self-diagnostics may promote reliability and reduce maintenance needs.

More than 50 routines verify proper operation, isolating malfunctions to individually replaceable assemblies and a 10-LED readout on the controller board displays self-test results.

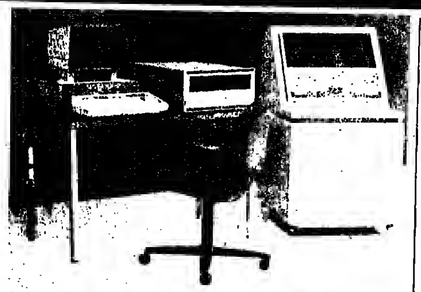
Formatted capacity of the HP 7910H is 12.09 megabytes and each magnetic disc surface uses 735 tracks plus three spares, with 32 sectors per track and 256 bytes per sector.

The HP 7970E tape drive, with its own Option 826 HP-IB (IEEE-488) interface, brings HP desk-top computer users the benefits of recording or storing data on ½-inch ANSI-standard magnetic tape.

Data may be exchanged easily between desk-tops and larger computers and large amounts of data stored on common media.

The HP 7910H disc retails at £4,584, the flat price of the HP 7970E Option 826 being £7,247 with first customer deliveries of both products expected in April.

Hewlett-Packard Ltd (CW), 308-314 Kings Road, Reading, Berks. Tel: Reading 61022.



H-P 7910H disc (centre) and H-P 7670E (right) make their debut.

Aimed at scientific market

A SIMPLE system with what is claimed as a near-limitless potential when attached to standard minicomputers has been devised by the Physics and Radioisotopes Services of ICI Petrochemicals.

The Gamma Trol Interface System comprises a small master unit measuring 200 x 120 x 120mm accommodating up to eight signal boards. It allows communication between a Commodore Pet and a variety of external devices.

Current uses range from control of a critical crystallisation process on a large chemical plant to that of a university teaching aid.

The user can easily select a combination of input and output options matching his or her requirements.

The analogue and digital options may be expanded later by adding more from a comprehensive range of plug-in boards.

Physics and Radioisotopes Services, PO Box 2, ICI Billingham (CW), Cleveland. Tel: (0642) 553601 Ext 3572/2727/3761.

Modata launches a multi-user system with flexibility

MODATA announces the DSC-4 computer system offering dedicated computing facilities with comprehensive network capabilities.

"Modata's networking enhancements are an integral feature of the DSC-4, with Multibus board expansion and software configurable output ports providing the user with a flexibility enabling the computer system to grow as his requirements grow," claimed Modata marketing director Bryan Barnes.

The DSC-4 comprises a processing unit and dual floppy disc drives in one unit offering the small user 128 K-bytes of RAM and a choice of single or double density data storage.

When used as part of a network, memory mapping provides each user with a share of 512 K-bytes of RAM while sharing CPU operation.

Outputs to printers, modems and VDUs are provided through four RS232 connectors with transfer speeds user selectable from 150 to 9,600bps and an RS422 option allows high speed data transfer up to 500 K-bps for local networks.

Two parallel data ports enable connection of high speed printer and Digital Microsystems HDD hard disc unit, which offers from 14 to 28 megabytes of store.

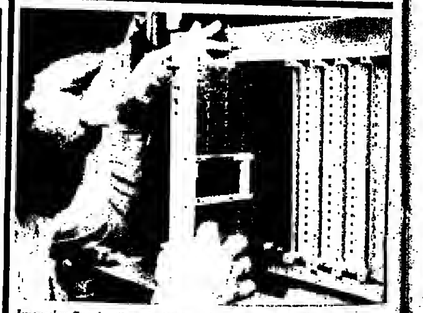
There is a variety of software packages available for the DSC-4 including accounting, payroll, order processing, stock control and word processing.

DSC-4 uses the CP/M based operating system, offering the user additional software from the large CP/M range of programs.

The combined software support offered through Modata's dealer network and advanced modular design of the DSC-4 may suit it to many application areas where one or more users require computing and memory facilities.

Word processing systems comprising printer, VDU and DSC-4 are available from dealers from £6,500.

Modata Ltd (CW), 30 St John's Road, Tunbridge Wells, Kent TN4 9NT. Tel: (0892) 41555.



Inspecting fine detail on the Simatic S5 program controller.

Siemens releases new program controller

GROWTH rates of 50-60 per cent per annum in recent years now make programmable controllers like the recently introduced Simatic S5 from Siemens Ltd technologically popular as oumerical controls and process computers.

The Simatic S5 may interest users wishing to implement extensive automation systems and requiring computer-like equipment, but who only have limited space available.

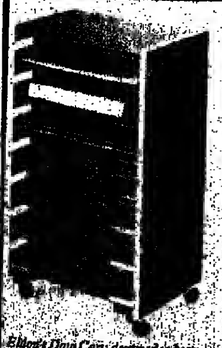
Simatic S5 design features include an absence of fans, signal voltages up to 220V, simple modular interchangeability and easy access to external connections.

Siemens' range now includes new compact central processing units, the S5-130K and S5-150K units having the same functions as the S5-130A and S5-150A upgraded versions.

A compact S5-130W central processing unit supplements the medium performance range.

Its performance features include RAM and EPROM memories with up to 16K capacity, 52 inputs and 512 outputs and an operation repertoire with binary logic functions.

Siemens Ltd (CW), Siemens House, Windmill Road, Sunbury-on-Thames, Middlesex, TW16 7HS. Tel: (09327) 85691.



Eldon's Data Can: designed to keep material both orderly and mobile.

Data on wheels

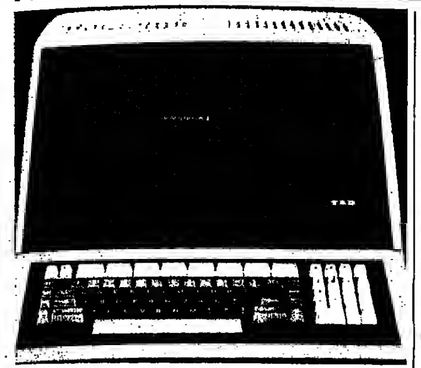
ELDON'S Data Can has been designed for computer forms and all users of computer data printouts. The practical and mobile Data Can, part of the Eldon Organisers range, consists of seven trays accommodating up to 4,000 computer printout sheets.

Horizontal storage eliminates the inconvenience and expense of binders and the dual-label system on each tray ensure easy identification and retrieval.

Overall dimensions are 733 mm high x 318 mm deep x 430 mm wide, each tray holding documents up to 402 mm x 280 mm.

Eldon Office Products (Europe) (CW), Unit 3, Clifton Road, Shefford, Bedfordshire SG17 5AB.

PRODUCTS – 2



TAB 132/15 – legible characters on non-glare screen.

Keeping TABs on display terminal

PERIPHERAL HARDWARE announces the TAB 132/15 Video Display Terminal, for which it is exclusive UK distributor. The terminal is said to offer all DEC VT100 and VT132 features at a comparable price.

There are additional benefits like a 15in CRT display and large, easily legible characters on a non-glare screen, other advantages including a versatile "soft" key function and four-page internal memory equivalent to 7680 characters.

The screen handles 24 data lines, each of 80 or 132 characters, plus one blank and two prompting lines. Letters are formed with true descenders by a 7 × 11 pattern in a 9 × 16 dot matrix.

Besides the ASCII set there are graphic characters for line drawings, form images and other graphics.

Character attributes, which can be used in any combination, include bold, blink, underline, reverse video, double height and double width.

The screen is available in green or white phosphor and can produce both dark letters on a light background and light on dark.

TAB 132/15 has 392 scan lines, over 50 per cent more than standard terminals, with resolution claimed to be improved greatly.

Even at 132 characters per line, words are legible at normal viewing distance. Specific functions of the eight "soft" keys are assigned by the operator or host computer.

TAB 132/15's electronic keyboard can be detached and keys are sculptured for operator comfort, the 88 active keys being supplemented by space for a further 16 to allow for future expansion and custom designing.

The keyboard is also provided with N-key rollover, permitting the operator to key at maximum speed without missing strokes.

The terminal is available at short delivery notice with demonstrations on request.

Peripheral Hardware Ltd (CW), Armfield Close, West Molesey, Surrey. Tel: 01-941 4806.

Time and cost saving

INMAC has introduced what it claims as a time and cost-saving internal cable assembly for Data General computers to link with DG computer discs, diskettes, magnetic tape units, card readers, line printers and other parallel devices.

The user slips the connectors directly to the DG computer backplate and secures the paddleboard and Inmac claims that he saves up to £70 and also the later problem of lengthy disconnection if the equipment has to be reconfigured.

Besides this new internal DGC-compatible cable, Inmac also stocks a wide range of the most popular DGC compatible cables for next day delivery in the UK and 2-3 day European delivery.

Inmac (CW), 18 Goddard Road, Astmoor Industrial Estate, Runcorn, Cheshire WA7 1QF. Tel: 09285 67551.

Alphanumeric model

BURR-BROWN has expanded its low cost Microterminal product line with the TM71 alphanumeric model costing £299 and suited to applications involving complex data, but where space is limited or the operating environment hazardous.

The waterproof TM 71 measures 21.59 x 11.43 x 1.52cm (8.5 x 4.5 x 0.6 inches) and contains a 42-key keyboard, a shift function allowing generation of up to 80 characters.

Also included on the front panel are a 16-character LED display and six LED indicators – two controlled directly by the host CPU and four indicating terminal status.

Four 80-character buffers are provided within the unit, two for data to be transmitted, and two for received data.

Communication between the CPU and the TM 71 is via either RS232C/V24 or 20mA current loop interface.

Up to 15 terminals may be connected on the same serial interface.

Burr-Brown International (CW), Cassiobury House, 11-19 Station Road, Watford, Herts, WD1 1EA. Tel. (0923) 33837.

Terminal table for UK

ERGONOMICALLY designed computer terminal table, which according to UK distributor Planned Office Interiors has 40 per cent of the German market, has been launched in the UK.

It can be provided with a comprehensive range of special purpose units for example floppy disc units, and is fully adjustable. Screen and keyboard can be tilted and moved to a position suiting the individual user.

It comes in a standard melamine finish, although alternative finishes are available. It costs £349.

Planned Office Interiors (CW), 18 St Martin's-le-Grand, London EC1. Tel: 01-606 3373.

PIP 85 makes data acquisition debut

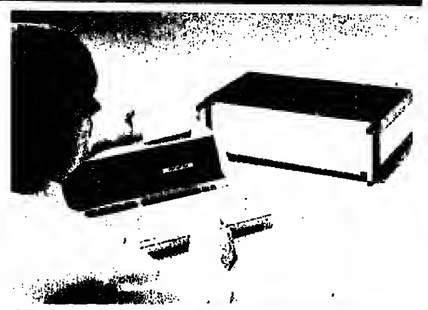
THE Control '81 exhibition at the Kensington Centre marked the debut of MC Computers' PIP 85 distributed data acquisition system, described as an economical and efficient model.

PIP 85 will be marketed by MC's parent company Micro Consultants, and comprises two portable units, the Hewlett-Packard HP-85F and MC's Plant Interface Peripheral (PIP).

Using an IEEE interface, the PIP 85F system allows multidrop operation, linking up to eight PIP input/output units to the central HP-85F – including remotely-sited units communicating over two-wire telephone links.

In operation, the PIP 85 is distinctly user-friendly, employing question and answer prompts derived from conversational extended Basic. This is both easy to learn and implement, making full use of the computer's integral keyboard, CRT display, strip printer and tape unit.

Micro Consultants Ltd (CW), Kenley House, Kenley Lane, Kenley, Surrey CR2 5YR. Tel: 01-688 4151.



PIP 85 employs question and answer prompts.

Thermal printer with complete control built in

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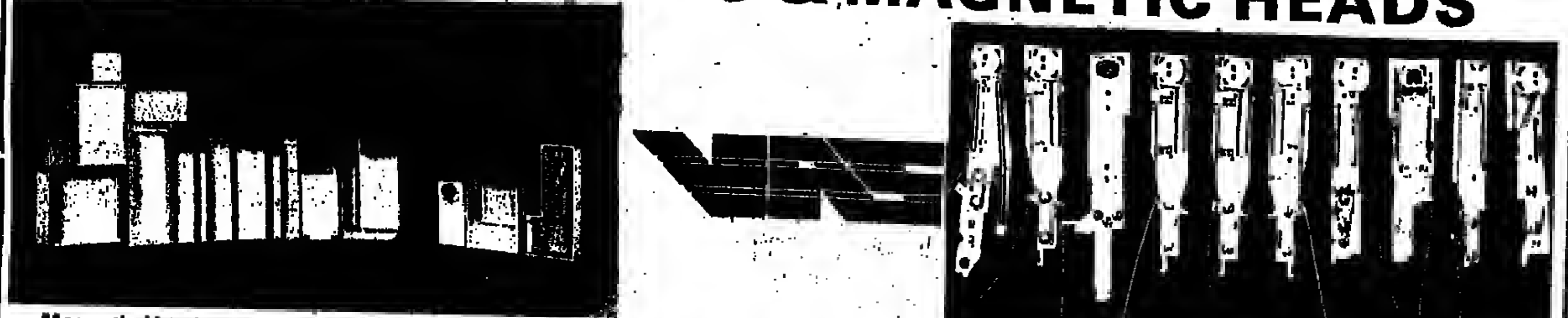

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Japanese computer companies are very keen on their staff learning English ....Kevin Cahill reports on a growth area

Teaching the industry's lingua franca in the Land of the Rising Sun

THE Japanese government recently launched its fourth successive programme to recruit teachers of English to work in Japanese universities and companies. And at least one British programmer has discovered he is as much in demand as an English teacher, as he was as an instructor of machines.

The Japanese programme is not specifically aimed at computer companies, but the country's major computer manufacturers are among the heaviest spenders in Japan on English language training.

In general, the computer companies are faced with two problems. Firstly, most computer languages in common use are what linguists call truncated forms of English. Cobol, Basic and Fortran statements are all framed in the form of English words or phrases.

Secondly, the major markets of North America, the UK, Australia and New Zealand are all English-speaking.

So how do the big four members of Japan Inc – Mitsubishi, Fujitsu, NEC and Hitachi – cope with the problem of teaching their staff English?

In the recent past, the four companies ran most of their English language courses in-house, using Japanese teachers to give the courses. Occasionally a teacher would be hired from outside, either from one of the English language schools such as the Oxford school of English, or privately through an established contact.

A spokesman at Mitsubishi explained that there has been a change recently. More of the courses were being done out-house with schools like the International Language Centre, and Oxford.

According to the same source, more than 90% of all the in-house courses given in the big four computer companies were language courses, with English probably accounting for most of the units taught. This is in sharp contrast to the average UK company, where most of the courses taught are task or management oriented and language courses are very rare.

In Japan, most of the executives in the computer giants will have learned English from the age of 11 or 12, because English is Japan's number one foreign language. They will have continued their English courses at university.

> More than 90% of all the in-house courses given in the big four computer companies are language courses, with English probably accounting for most of the units taught.

Chris Ward of ILC says that English special purpose courses, such as computer English, are not popular in Japan. Technical Japanese uses loan words, mainly from American English. Often specialists can deal with technical English but not English conversation, which partly explains the demand for general English.

According to an English employee of Nippon Electric, who has been to Japan, it is not unusual to find senior analysts and programmers taking private English lessons at eight in the morning. These lessons are given privately by teachers working at the English language schools.

Computer Weekly contacted Bill Roff, a former programmer with a European based multinational who now works for the ILC in Tokyo, the biggest English language teaching organisation in Japan.

Bill has been in Tokyo for five years and reckons he will stay there much longer. He left his programming job because, he says, "The initial novelty wore off. The job was a mixture of tedious paper work with one deadline after another, interspersed with hectic European jaunts. I thought I was heading for ulcers and decided it was time for a change. A classic case of dropping out, I suppose."

Bill was attracted to Japan by the idea of somewhere completely unknown to him, and saw the ILC ad in a Sunday paper.

> Special purpose courses such as computer English are not popular . . . Technical Japanese uses loan words, mainly from American English. Often specialists can deal with technical English but not conversation . . .

CW asked him how he found living in Japan.

"It's like living in Toytown," he said. "It's safe and predictable. Everything works and trains run on time. Some foreigners complain that they are never accepted into Japanese society, but for the escapist it's ideal. You are always on the edge of society as an observer rather than a participant. The language is fascinating and deserves a lifetime of study."

Bill added wryly that there were all sorts of frustrations and the only way to deal with them was to adopt a phlegmatic approach. The Colonel Blimp approach simply did not work in Japan.

Bill found the teaching itself very easy.

"With adult classes there are no discipline problems though there is a need to adjust to cultural differences. There is little opportunity for self-assertion and no room for blistering debates.

"It's vital to be receptive to the Japanese students, whose unspoken reactions can be more important than spoken reactions in the UK. A smile can mean embarrassment. The students want teachers sympathetic to things and attitudes Japanese. The super-zappy approach can overwhelm them."

Roy Evans, personnel director at ILC UK, who worked in Japan from 1973 to 1977, said that it was very noticeable how demand for English language teaching had risen in Japan all through the last recession.

Although the Japanese economy had remained fundamentally out of recession this time, the same phenomenon had recurred.

The number of schools teaching English has risen at an almost exponential rate. ILC's Japanese associate school now has a record number of teachers, 50 in all, mostly from the UK, and the company has opened a second branch in Tokyo. The Osaka and Tokyo branches are now teaching over 2,000 students on some 150 courses.

The average take-home pay of the company teachers is about £600 per month, much less than the £20 per hour which is readily obtainable for teaching English privately.

On the other hand, the big schools provide their teachers with assistance in obtaining accommodation. This is usually in the form of paying the key money, a sort of premium on letting which can equal six months' rent, according to Roy Evans. This one item has probably done more to generate the myth of Tokyo as an expensive area than anything else. Flat rents are about the same, maybe 10% above London rates.

Here in the UK, IBM runs a permanent English language programme with ILC's associate, IH, in Hastings.

According to IBM, English is the lingua franca of the international computer industry, and over 100 senior executives from IBM International went through the IH programme in 1980.

Learning English at the International Language Centre School in Tokyo. It is not unusual to find senior analysts and programmers, unable to follow daytime courses, taking private English lessons at eight in the morning.

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As a result of continued expansion, a very successful trading company on the fringe of the city urgently require still more PL1 programmers.

Candidates should have a minimum of 2 years' PL1 programming, which has been gained in a team environment with involvement in at least one medium system. IBM Cobol programmers may also apply.

Apart from the salary the company offers good chances for promotion and numerous benefits, befiting an organisation of their reputation.

D.8047

JNR. ANALYST/PROGRAMMERS IBM 4341

LONDON **to c. £8,500**

Openings exist within a leading oil company for junior analyst/programmers who can show a successful career path within the computer industry together with a good educational record.

Their requirement for at least one year's commercial COBOL programming on IBM 370 or 4300 machinery together with at least good 'A' levels or, preferably, a degree.

In return they offer a definite career structure with ample training facilities, and the very best in company benefits and working conditions.

D.8027

PROGRAMMER/ANALYST RPG II

LONDON, CITY **To £10,000**

An excellent opportunity has arisen for a Programmer/analyst who would like more involvement with systems design. The company you will be working for are totally involved in banking and are American owned.

Ideally you should have between 2-4 years' RPGII Programming experience and a good theoretical knowledge of system design. A good knowledge of banking applications is also required.

The company offer an excellent career path coupled with regular training courses and benefits including subsidised restaurant, sports and social club and mortgage facilities at well below building society rates.

M.5137

RPG II PROGRAMMERS

LONDON, H. COUNTIES **To £10,000**

Datascene have recently taken a considerable number of vacancies for RPG II Programmers in London and the Home Counties.

The range of industries within the client database are wide ranging but include Petro-chemical, Banking, Insurance, Engineering and Software houses.

Ideally you should have at least one year's experience but preferably 18 months' together with a good standard of education.

Progression within the various departments is good as all companies offer career progression.

M.GEN

BASIC, BASIC + PROGRAMMERS

LONDON/CITY **£7,500-£9,500**

We are in contact with a number of Banks who are seeking programmers with upwards of eighteen months' experience in business BASIC, BASIC +, BASIC +2, or AIMS. Successful applicants can expect to be working in a batch and real-time environment on applications such as foreign exchange and eurobonds. Opportunities for career progression are excellent and the employment packages offered include interest free season ticket loans, productivity/bonus schemes, staff restaurant/luncheon vouchers and low interest mortgage facilities.

R.GEN 2

ANALYST/PROGRAMMERS & PROGRAMMERS

S.W. LONDON **£7,500-£10,500**

A leading manufacturing company require an experienced Senior Analyst/Programmer, one Analyst Programmer and one Programmer to complement their existing team. Experience required ranges from 2/5 years' of on-line working with COBOL. A sound knowledge of commercial application and project management will be advantageous to those applicants applying for the senior positions offered. The company benefits include five weeks' holiday, product discount, subsidised canteen and Pension Scheme after one year's employment.

R.8013

HEWLETT PACKARD 3000 COBOL

LONDON/HOME COUNTIES **£7,500-£9,000**

We have several Hewlett Packard clients with current vacancies for experienced Analysts, Analyst Programmers and Programmers. Experience required is from 1½ years' upwards on this equipment with a good knowledge of commercial or Insurance applications and a good standard of education. Progression within the various companies is excellent as all offer solid career growth. A wide range of company benefits are offered and represent fine opportunities for suitably qualified applicants.

R.GEN 1

The above vacancies are only a small selection from those current. [illegible] always delighted to talk to experienced [illegible] staff wishing to further their careers.

[4770]

Datascene International Limited,
Sceptre House,
169-173 Regent Street,
London W1R 7FB. Telex: 25851

01-439 7871
24-hour answer phone

Technical Service Engineer-Europe

computer peripherals progressive salary + car

Among its many fields of interest, 3M markets professional data recording equipment. We are now seeking a Technical Service Engineer to provide technical support for our sales personnel and customers throughout Europe.

We are interested to hear from electronics engineers qualified to at least HNC level who have gained wide-ranging practical experience in advanced digital technology.

Working from our base on the west side of London, you will spend a considerable proportion of your time on field visits to customers' premises in Europe, so personal mobility is essential. Full product training will, of course, be provided.

The impressive remuneration package consists of competitive starting salary plus company car and an extensive range of large-company benefits.

Write with personal and career details to: K. B. Jackson, Employee Relations Manager, 3M United Kingdom Limited, 3M House, PO Box 1, Bracknell, Berks. RG12 1JU.

[4781]

3M

AWA
Anglian Water Authority

The AWA provides the water supply, sewerage and sewage treatment, water conservation, land drainage and other important water services for over a fifth of England. Applications are invited for the following posts in the Corporate Planning and Management Services Department based at the Authority's Headquarters in Huntingdon.

PLANNING OFFICER

Salary up to £7,941 — Ref. H2M007

This post is principally concerned with the maintenance, analysis and development of the Authority's Corporate Planning System, and advice on computing to the Corporate Planning/Management Services section.

The duties include responsibility for staff involved in the day to day running of the Capital Development Programme Data Base and the provision of reports and models used in its analysis.

The post requires a flair for problem solving and some computer programming experience. Knowledge of data base management or project information systems would be useful.

General relocation expenses will be paid in appropriate cases.

If you are interested please call Huntingdon (0480) 56181 Ext. 2 for information and application form.

The closing date for applications is Friday 27th March 1981, and should be sent to the Assistant Director (Planning).

ANGLIAN WATER AUTHORITY
Ambury Road, Huntingdon, Cambs.

[4757]

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ipcmagazines

PROGRAMMER/ANALYST
On-Line Commercial Systems
Fortran
Prime

Our small development team is being expanded to cope with the demand for new on-line systems. The hardware is a dual Prime 400/550 configuration. The software is Fortran, Midas and our own screen handling routines. Applications include: – Order Processing – Invoicing – Survey Analysis – Marketing – Planning. At least two years Fortran programming experience preferably with some commercial content. Familiarity with on-line program development, knowledge of Primos and/or Indexed Sequential files would be desirable. Ability to communicate clearly with user departments. Salary £8,000-£9,070 (review due April).

Phone or write to David Hardill, IPC Magazines Ltd., King's Reach Tower, Stamford Street, London SE1 9LS. Tel: 01-261 5818.

[4758]

BOX NUMBERS

Box number replies should be addressed to:

Box Number ....

c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS

CONTRACT?

ANAL PROGS & PROGRAMMERS
Various locations.

ANAL. PROGRAMMERS
Indefinite contract. Central London

THE OPEN UNIVERSITY
FACULTY OF TECHNOLOGY
COMPUTING UNIT

PROJECT OFFICER

The unit has a vacancy for a Project Officer from the 1st April, 1981. Applicants should have a degree in Computer Science (or similar) and several years' experience with the UNIX operating system and C language. A knowledge of other languages and systems, particularly Pascal, Fortran, VMS and RDOS would be an advantage.

Wide-ranging duties include the installation and maintenance of systems programs, cross software for micros and assistance for non-specialist users. The main hardware is a PDP-11/60, but there may be work on D.G. Novas, VAX 11/780 and DEC-20.

Salary will be on the Grade 1A Scale for Project Officers (£6,505-£9,595).

Application forms and further particulars are available from: Mrs. S. McBrearty (3107/2), Faculty of Technology, The Open University, Walton Hall, Milton Keynes, or telephone Milton Keynes 653941. There is a 24-hour answering service on 653868.

Closing date for applications: March 30.

PROMOTION FOR SALESMEN
BASIC £10,000-£15,000
ON QUOTA £30,000 +
CAR OF YOUR CHOICE

Our client, a major European Mini Manufacturer has just launched a U.K. Subsidiary selling into commercial users. This Leader seeks to extend its reputation for reliability and performance by building on its existing impressive turnover of £160 million, total group sales exceed £600 million. This guarantees stability and future investment in people like you. With realistic quotas and generous bonus, highly ambitious Sales Executives capable of demonstrating a proven track record in mini computer systems can expect early promotion and real rewards in a dynamic environment that only real growth can offer. If you feel capable of this challenge and live in London or Home Counties, then call Clinton Hardy-Davies today but hurry, hurry!

ALLTRONICS PEOPLE (AGY) Tel: 01-543 4544

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DEVELOPMENT PROGRAMMERS CAD SOFTWARE

WILTS./GLOS. BORDER **£7,000-£8,500**

A household name and a pioneer in the research and development of high technology communications products. Our client already has a respected and successful range and is continuing to invest in the development of advanced Systems for Business.

You should offer:

★ A good degree (Electronic Engineering or Physics preferred)
★ 1-3 years' post graduate experience
★ Sound high-level programming (most work is in FORTRAN 77 but PASCAL/ALGOL or BASIC would also be relevant)

Computer Aided Design is an important aspect of product development and the company's CAD Group is responsible for the provision of computer aids for all the development departments. Special emphasis is placed upon LSI and hybrid circuit design and layout.

Applications include:

★ Interactive graphics
★ Design Automation
★ Circuit Analysis

Whilst previous experience of CAD would be useful it is by no means imperative. A DEC VAX 11/780 is installed for system development and full training will be offered where necessary. Excellent conditions of employment apply including full relocation expenses where appropriate. To apply either telephone Myriad on the number below or write quoting reference RN1/1203/CW.

MOVE INTO FINANCE
£8,500 - £10,500 + BENEFITS

One of the CITY'S leading financial organisations has committed a large investment in high technology thereby giving their DP department a development plan that will enable the Company to remain a major force in international finance.

TP software and intricate databases will process transactions in a fraction of the time thought possible a few years ago.

Located in the heart of London, our client can offer a secure and positive future and all employees enjoy a range of worthwhile benefits that further enhance a generous starting salary.

PROGRAMMERS **c. £9,000**

A good understanding of COBOL will give you the opportunity of increasing your technical knowledge on IBM equipment plus training in systems analysis. CICS and/or database experience could take your salary into five figures and for this you would be expected to lead a team of programmers and assist with systems design.

ANALYSTS **c. £10,000**

To be involved with all aspects of project development, the ANALYSTS will be sympathetic to users and programmers alike ensuring that both groups work in harmony. Candidates could well be Analyst/Programmers seeking a full Analyst role and persons with a financial background will have a distinct advantage.

Ref. S1/1203

PROGRAMMERS TO PROJECT LEADERS

ESSEX **£6,000-£10,000**

Our client has outstanding openings for Programmers to Project Leaders who wish to further their career on an interesting variety of applications.

Vacancies range from applications PROGRAMMERS through to SENIOR ANALYST/PROGRAMMERS and PROJECT LEADERS. Successful candidates will work within a stimulating and highly professional environment using the most advanced techniques on a range of development projects.

PROGRAMMERS should have a minimum of eighteen months' application programming using COBOL.

ANALYST/PROGRAMMERS should have a minimum of two years' experience and these positions will appeal to Senior Programmers who wish to move into systems analysis.

PROJECT LEADERS should be capable of designing and controlling projects from feasibility to implementation.

The company has an outstanding record of growth and in addition to excellent conditions of employment offers a secure and progressive future to the people appointed.

Ref. B1/1203

BUSINESS & COMPUTING CONSULTANT

HARROW MIDDLESEX **£NEG. COMPANY CAR**

Our client, a member of a highly successful group in the Leisure Industry, now wishes to appoint a Consultant who will advise Board Level Management upon the potential use of new computing technology within the business activities of the company.

Future projects include the setting up of a Communications Network including Message Switching and developing towards the Electronic Office concept. Whilst specific indepth technical knowledge is not essential, the person appointed must be capable of recruiting people with the necessary expertise to implement such projects.

In addition to being self-motivated a sound awareness of general business principles is considered to be equally important as a good understanding of computing and data processing.

This is a senior Management appointment and will provide a career path to line management in the Group. The commencing salary is negotiable and attractive benefits include a company car.

Ref. NW1/1203

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

JBA

Consultants (RSTS/E)

Zurich, Luxembourg, Frankfurt **c. £16,000+Exps.**

Our client, a Swiss Management Consultancy, with offices in the above locations wish to recruit professionals to strengthen their current project teams involved in the development and installation of banking systems, throughout Europe.
Ideal experience would be 3 years Basic+ or Basic+2 in a RSTS/E environment as a senior member of a development team.
This being a permanent overseas appointment, candidates must be self motivated, adaptable and be prepared to travel between project locations when the need arises.

Contact: Brian Postles

Analyst/Programmer

London **c. £11,000+ benefits.**

Our client, a well established commercial organisation, a household name, wishes to recruit an Analyst/Programmer to work in the System Support Team which has a responsibility for the efficient and effective running of live applications and the provision of an enquiry facility in the User Departments.
Candidates should have around five years experience in an IBM OS environment with a substantial background using PL/1. Knowledge of financial/accounting systems would be an obvious advantage.

Contact: Jim Baker

Consultant

London **Quality Assurance** **to £10,000**

Our client, a very successful consultancy has grown steadily to the extent and complexity of its operations. They are currently seeking a Software Engineer with the experience and ability to make an immediate contribution in a demanding team environment.
The QA team works in close co-operation with Project Leaders and therefore have an opportunity to acquire a unique overview of the company's activities.
The appointee will play a significant role in the audit and review of technically advanced applications with special reference to Defence projects.
Applicants will be able to demonstrate a successful technical background which will include an appreciation of electronic engineering and QA procedures.

Contact: Margaret Stevens

Programmers

City **To £10,000**

Our client, a highly reputable British Merchant Bank wish to recruit 2 programmers to join a small team responsible for the introduction and development of a comprehensive range of banking and financial applications.
Applicants should have at least 4 years experience in d.p. preferably gained on Hewlett Packard equipment together with a good working knowledge of COBOL. Familiarity with IMAGE or TOTAL databases is essential. Special preference will be given to candidates with a banking background. Usual banking benefits apply.

Contact: David Hendry

COBOL Programmers

Sussex/Hampshire **c. £9,000**

We are in the process of recruiting competent COBOL Programmers, for two of our clients, both well established systems houses.
A minimum of three years sound COBOL experience, preferably from an on-line or real-time environment with particular emphasis on ICL ME 29 or 2900 series using IDMS.
Consideration will be given to candidates with a good COBOL programming background using other hardware. Applications experience should be accounting and financial.
Opportunities will exist to progress into analysis but it is essential to have a preference to stay in programming for the immediate future.

Contact: Janet Chilvers

Communications Programmers

London **c. £8,000**

We have been retained by an international consultancy organisation, who are expanding their development in Videotex systems, to recruit two software programmers to be involved with this exciting application.
Applicants should have at least two years' programming experience, preferably with FORTRAN on PDP 11's or VAX 11's in a communications environment. Knowledge of X25, 3270, packet/message switching would be an advantage. Ability to work with users with minimal supervision is essential.
The job involves colour, business graphics and networking.

Contact: Jim Baker

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-439 9311.

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datascene

OPERATIONS

IBM MVS OPERATOR — **LONDON** — **c £6,000**
Very large transport company require ops with 1 year exp. of MVS JES 2. Good opportunities for promotion which includes possible progression to programming. G.5955

IBM OS VS1 SNR. OPERATOR — **DORSET** — **c £6,500**
Large financial company require operational staff with a min. of 2 years' exp. of OS/VS1 using MVS and CICS. Very good company package includes Mortgage, Life Assurance, Restaurant, Sports and Social etc. G.5966

IBM DOS SHIFT LEADER — **LONDON** — **c £8,500**
This financial company requires an experienced shift leader with experience of DOS, VM and CICS. It is unlikely that this person will be under 25 years' of age. Excellent benefits include mortgage, non-contributory pension scheme etc. G.5135

IBM OS VS2 OPERATOR — **SURREY** — **c £6,000**
Market leader require exp. operator to work in one of the company centres with T.P. links throughout the U.K. At least 2 years' experience with sound knowledge of OS/VS2, MVS exp. of T.P. advised. Scope for promotion and staff shopping facilities. G.4903

IBM JES2 SHIFT LEADER — **LONDON** — **c £9,000**
Large company requires experienced shift leader, good OS JCL a must, plus good JES2. At least 5 years' experience of IBM required. Good benefits and prospects. G.4903

IBM SYSTEM 3/15 OPERATORS — **LONDON** — **c £5,500**
Overseas Bank require experienced operators for their banking system to work 2 shifts. At least 1 year's experience required. All the benefits of a financial company + good prospects. G.GEN

ICL GII/VMEB OPERATOR — **£5,700**
An International Company based in West London requires an operator with minimum of two years' experience operating on a two shift system. Good prospects. Excellent company benefits. B.4003

ICL SYSTEM 4 OPERATOR — **£5,900**
URGENT! City based financial company requires operator min. 18 months experience. Opportunity to operate new large main frame now being installed. Offer excellent future promotional prospects. Generous company benefits. B.5138

ICL GII/DME OPERATOR — **LONDON** — **c £5,500**
Large machine user has a requirement for an experienced operator with a min. exp. of 1 year on ICL 2956. Very good prospects for promotion and training facilities are excellent. B.4791

IBM MVS OPERATORS — **WORCESTER** — **c £8,000**
Very large industrial user has a number of operator vacancies at their computer centre for MVS JES 2 people. Minimum of 18 months experience for these shift only positions. G.5004

IBM OS VS1 OPERATORS — **LONDON** — **c £6,500**
Market leader has opening for OS/VS1 ops for large IBM installation. 1 year's experience minimum for this shift only post. Very good company package includes mortgage, restaurant etc. G.5056

(4700)

Datascene International Limited, Sceptre House, 169-173 Regent Street, London W1R 7FB. Telex: 25891

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PERMANENT RECRUITMENT DIVISION
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   Name your Salary? + car

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   Min. 5 Figure Income + car

We need experienced computer professionals (mid-late 20's) with or without a proven sales background. They must be totally self motivated, capable of working with the minimum of supervision, and possess the self determination to succeed in a competitive, fast expanding market, and not afraid of hard work.

In return, we offer:

- A High Income
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- Positive Career Development
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To apply, in strictest confidence, telephone Fabian Brewster, Managing Director, on 01-434 2714, quoting ref. CJ/ONE.

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A DIVISION OF INBUCON MANAGEMENT CONSULTANTS LIMITED

CITY/E.C.1
DATA PROCESSING MANAGER
CIRCA £12,500 PER ANNUM
PLUS: CAR - PROFIT SHARING - MORTGAGE SUBSIDY - AND MANY OTHER FRINGE BENEFITS

An opportunity has arisen for a well-qualified computer professional to join a subsidiary of a major International Financial Group as Data Processing Manager.
Ideally you will portray the following levels of experience and skill:

1. A sound D.P. background having developed your career from Programming through Systems Analysis and Design and currently occupying a responsible management position.
2. You will have experience of working with sophisticated On-line/Real Time systems preferably related to financially based applications.
3. Familiarity with more than one level of computer mainframe, with particular experience based upon PDP 1170 hardware will prove highly attractive.
4. We would expect you to be experienced in managing D.P. personnel at all levels and to portray the ability to communicate well with user personnel and departments.

THIS IS AN OUTSTANDING OPPORTUNITY FOR A PERSON TO JOIN A FORWARD-LOOKING AND DEVELOPING COMPANY INTERESTED IN TAKING ADVANTAGE OF NEW D.P. TECHNOLOGY AND EXPANDING ITS D.P. FACILITIES FOR THE BENEFIT OF ITS USER DEPARTMENTS. OUR CLIENTS WISH TO MAKE THIS NEW APPOINTMENT BY THE END OF MARCH AND THEREFORE RING US (24-HOUR ANSWERING SERVICE) OR SEND YOUR C.V. NOW WITH A VIEW TO ARRANGING AN EARLY INTERVIEW. **REF: CW/8/81**

INBUCON MANAGEMENT CONSULTANTS LIMITED
D.P. Appointments & Contract Personnel,
Greenock House, 19 Cuckfield Road, Hurstpierpoint,
Sussex BN6 9RP. Telephone: Hurstpierpoint (0273) 833818.

(4766)

INBUCON

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SMF-Data Services provides a full range of computer facilities to one of the City's leading Merchant Banks. They have twin UNIVAC 1100/60's, which will service a network of over 100 micro-computer-based terminals, supporting systems in the fields of Foreign Exchange, Investment Performance, Portfolio Valuations, Loans and Deposits and general banking. SMF also provide turnkey services to clients using Hewlett-Packard 3000 hardware.

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Senior Analyst/Programmers
c.£11,000 + benefits — City
Minimum of 6 years programming experience required, including COBOL, plus the design and implementation of a major system.

Analyst/Programmers
£7 - £10,000 + benefits — City
2-5 years experience is required, including COBOL and the ability to liaise with users.

HP3000 Analyst/Programmer
£8 - £10,000 + benefits — City/West End
This Analyst/Programmer will work on client's premises and be involved in all aspects of a project. Programming is in COBOL.

Software Programmer INTEL micros
£8 - £10,000 + benefits — West End
A knowledge of hardware interfacing, as well as Assembler programming, is required for the development of micro-based word and data processing products.

CAPP ASSOCIATES 01-686 9693

Please contact Joan Ainsworth (24-hour ansaphone) quoting ref: CW108-1A
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Computer and Professional Personnel Consultants

U-C-A

SENIOR SALESMEN

London & Home Counties — **To £20,000 O.E. + car**

An established market leader wishes to expand his penetration of the mini-micro market by establishing Senior Salesmen to take charge of existing accounts whilst obtaining new business. A real chance to match your efforts with reward and managerial promotion after a reasonable period is well on the cards.

CW11/1 Michael

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W. Midlands & S.E. England — **To £18,000 + car**

One of the U.K. market leaders in communications hardware with a turnover of £12 million last year is expanding fast. It now requires five more salesmen to meet market requirements for their very successful products of modems, multiprocessors, network analysers and message switching systems (the message switching salesman should live in the Western Home Counties). ALL their salesmen reached QUOTA LAST YEAR so apply now and enjoy a truly successful career. (You must be under 40). CW11/2 Michael

SALES SUPPORT

London & Home Counties — **To £9,000 + car**

We have six MINI computer manufacturing companies with offices around the country who require people with the confidence to deal with clients in a pre- and post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. IBM or other mainframe experience is also an advantage.

CW11/3 Michael

SENIOR PROGRAMMER

Wembley — **£9,000**

An international manufacturing company are looking for a Senior Programmer with 3 years' experience of COBOL, including some Jackson or other Structured programming involvement. The applicant should ideally have an IBM DOS CICS background, though ICL or UNIVAC are acceptable. Team leadership qualities are essential for this position. There are excellent company benefits including a generous bonus scheme.

CW11/4 Tricia

PROJECT LEADER

E. London — **c.£11,000**

This well-known manufacturer requires a Project Leader with 3 years' experience of IBM PL/1 for involvement in large project systems development. The hardware is 370 under DOS/POWER/VS. Company benefits include a Non-CPS. If your experience is relevant, contact us now for further details.

CW11/5 Tricia

PROGRAMMERS/SENIOR PROGRAMMERS

W. London — **To £10,000**

If you prefer to work West of centre, and have 2 years'+ ICL COBOL experience, then ring now for more details of the above vacancies. The company is involved with household items and offers generous discount to employees. Other benefits include flexitime and free meals.

CW11/6 Tricia

PROJECT LEADER

C. London — **To £11,000**

A Project Leader is sought by this famous international company. The applicant will have worked for 3-4 years as an Analyst Programmer using IBM COBOL and will ideally have CICS and DL/1 experience. He/she will also have the ability to lead a major project. The company have recently installed a 4341 under DOS/VSE and will be converting to OS shortly. There are generous additional benefits including free meals and Non-CPS.

CW11/7 Tricia

IBM OPERATOR (DOS)

Essex — **£6,000**

You're not a No-Go. Neither is this go-ahead expanding company based near Colchester, using a 4341 with DOS/VSE. With relocation assistance, mortgage assistance, canteen, pensions, holidays and sports and social club. If you have one or more years' relevant experience, don't be an outsider and call me.

CW11/8 Simon

OPERATORS

Croydon — **To £6,200**

A large installation with wide company benefits requires an operator with two years' experience of MVS JES2 & OS/VS2 to operate their IBM 370/158.

CW11/9 Simon

CONTRACT ANALYST/PROGRAMMERS WANTED

To £450 p.w.

IBM	DOS COBOL CICS	N. LONDON	8 MTHS+
IBM	COBOL MVS TOTAL MINI EXP.	BERKS	3 MTHS+
IBM	MARK IV	LONDON	6 MTHS
ICL	2900 COBOL IDMS/VME/B	BERKS	3 MTHS+
PDP	DIBOL RT11	NORTHAMPTON	3 MTHS
IBM	PL/1 OS MVS	MID. EAST	1 YR
IBM	COBOL SYST. PROG.	HOLLAND	6 MTHS
IBM	FORTRAN SCIENTIFIC	HOLLAND	1 YR
ICL	2960 COBOL IDMS VME/B	WEST AFRICA	1 YR

UCA **01-995 3883**
Recruitment Consultants
Universal Computer Associates Limited,
Data Express House, [illegible]
Prospect Place, London W4 [illegible]
(01-958 6738 Evenings)

Senior Analyst/ Programmer

West Yorkshire — *up to £9,000*

Renold Limited is a worldwide group with annual sales in excess of £125 million. The company's primary business is the manufacture and distribution of power transmission products; the Bradford unit concentrating on precision gears.

Following a decision to decentralise computer facilities our client wishes to recruit a senior analyst/programmer to take charge of a computer department at present in the process of formation. He or she will report to the office manager, assist with recruitment of additional staff and be responsible for the installation of a ½ Mb ICL ME29. Existing computer applications will be transferred to the new computer whilst new systems will be introduced for which it is expected that packages will be evaluated.

Candidates should have sound programming and analysis experience gained with on-line ICL equipment preferably including stock and production control techniques.

This is a distinctive career development opportunity for a resourceful individual with team leadership ability.

Please send career details or telephone for a personal history form quoting MCS/4708 to: Terry Halloran, Executive Selection Division, 9 Bond Court, LEEDS LS1 2SN. Telephone 442044.

Price Waterhouse Associates

(4784)

SYSTEMS SUPPORT MANAGER

N. London — **c £11,000 + Car**

The exceptional export achievements of this important subsidiary of a major British group have lead to a growth situation seldom found in today's climate. They supply probably the most advanced range of electronic equipment in its field to the Graphic Arts and Printing Industries and future success will be due to an already established programme of new product development.

With such heavy international commitment, this key position has been created to maintain and develop a high degree of efficiency in field service support through a highly competent service team. An active contribution to the operations of the field sales and agency network will be of paramount importance and will involve overseas travel.

Aged 30-45, and holding a relevant degree, you should have proven management ability in field/customer support within computer peripheral, electronic systems or allied industries.

A generous benefits package will include relocation assistance where necessary. This appointment is open to male and female applicants.

For further details, telephone Stephen Smith on Leicester (0533) 551444, or write quoting ref: 0206 to:

QMS Recruitment
PO Box 18, Leicester LE1 9DW

CAD Programmers
Computer Aided Design of Digital and Analogue Systems

The Computing Applications Group at the Rutherford and Appleton Laboratories is looking for two new staff to join a team involved in providing Computer Aided Design software to support integrated circuit design (digital and analogue) in universities. A range of powerful computers at the laboratories used for this purpose are networked to multi-user minicomputers in university departments. The software interfaces to the Electron Beam Microfabricator at the laboratories which is used to make masks for integrated circuit fabrication. The software also serves those who wish to design using existing ICs.

Although the work is primarily concerned with CAD techniques, applicants should have some familiarity with digital or analogue circuit design. The work will involve developing and supporting new interactive software (including interactive graphics programs), maintaining established programs and assisting research workers in their use, and establishing a device, material, and process library for use with the software.

The posts will be in one of the following grades:
Scientific Officer .... £4089-£6480
Higher Scientific Officer .. £6075-£7999
Research Associates (fixed 3 year term) .... £5862-£8006

The laboratories are a friendly community with their own restaurant and sports facilities nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and non-contributory superannuation scheme.

Application forms can be obtained from Mary Elizabeth Fry in the Personnel Group on Abingdon (0235) 21900, ext. 510. Alternatively, write to her quoting reference VN 916, Rutherford and Appleton Laboratories, Chilton, Didcot, Oxon. OX11 0QX. More technical information can be obtained via Nesta Jones (ext. 6660). Closing date of application is: 27th March 1981

(4780)

Rutherford and Appleton Laboratories

"THE BRITISH ARE COMING!"
NEW ENGLAND, USA.

Our clients, the Paul Revere Group of Companies are one of the leading financial/insurance organisations in the U.S.A. Established in 1895 they rank today in the top five per cent of the country's life insurance companies.

These permanent career positions are located at their Worcester, Mass., headquarters where they utilise IBM 370/158 and 148 hardware under DOS/VS using CICS, CMS, DMS and Mark IV. Cobol is the main language and all work will be on the development of new on-line applications.

SENIOR ANAYLST PROGRAMMERS — $24,000-$30,000

A minimum of four years' D.P. experience is required with fluency in at least two programming languages with an understanding of DOS and JCL. Preference will be given to candidates with IBM experience, but this is not essential.

PROJECT LEADERS — $30,000-$34,000

A minimum of six years' D.P. experience is required and candidates must be able to demonstrate the ability to provide project leadership support. A programming background is essential and preference will be given to candidates with experience of CICS, CMS or DMS. A knowledge of insurance applications would be ideal, but this is not essential.

SENIOR SYSTEMS PROGRAMMER — $28,000-$34,000

A minimum of two years as a Systems Programmer is required and candidates must have a thorough knowledge of basic Assembler and systems internals (MVS, CICS, etc.). The successful candidate will have the experience and ability to build an MVS system, generate the operating system and install maintenance using SMP and analyse system dumps with IBM TSR.

Our clients will be interviewing for these positions in mid-March so please telephone immediately or write to E. J. Rhodes Associates, c/o CRS, 18 Buckingham Palace Road, London, S.W.1. Telephone number 01-828 1384.

(4787)

THORBAR
A DIVISION OF INBUCON MANAGEMENT CONSULTANTS LIMITED

THAMES VALLEY
TERRITORY MANAGERS — C. £21,000 + CAR + FRINGE BENEFITS

As one of the U.K. leaders in the Software and Consultancy field, our clients require to appoint a number of additional Territory Managers to satisfy the ever-increasing demands being placed upon them for their services.

Ideally candidates will be able to portray a proven sales record gained from marketing computer software, turnkey systems, and consultancy services, including packages and bespoke systems, to the Local Government Sector, Banking, Finance, Energy, General Industry and Commerce.

You will work with maximum freedom supported by a highly qualified technical support team and be expected to meet some or all of the following requirements:

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4. Ideally you will have in addition to a proven sales background, strong technical ability coupled with experience gained from working with a wide range of computer applications and industries.

CALL US NOW (24-HOUR ANSWERING SERVICE), OR ALTERNATIVELY, WRITE TO US WITH YOUR C.V. AS WE WISH TO PROCEED IN PRESENTING SHORTLISTS OF CANDIDATES TO OUR CLIENTS AS SOON AS POSSIBLE. REF: CW/9/81

INBUCON MANAGEMENT CONSULTANTS LIMITED
D.P. Appointments & Contract Personnel,
Greenock House, 19 Cuckfield Road, Hurstpierpoint,
Sussex BN6 9RP. Telephone: Hurstpierpoint (0273) 833818.

(4795)

INBUCON

Targa

SYSTEMS ENGINEER
CITY — to £10,500

A superb opportunity to join a flourishing BANK in the City. It is essential that the successful applicant has the maturity and ability to cope with a range of duties which include generating Operating Systems, Database and applications support, troubleshooting and software enhancement. Definite prerequisites are extensive knowledge of COBOL gained in a VS environment, whilst a background which includes DOS/VSE, POWER and CICS would be advantageous. The usual BANKING BENEFITS including MORTGAGE SUBSIDY apply. Ref: R3274

ANALYSTS
CITY — c. £11,000

Due to continued expansion, a large ICL installation have vacancies for experienced SYSTEMS ANALYSTS. Applicants must have a formal background which includes one or more of the following application areas – Finance, Admin, or Operation Research. The prime programming languages are COBOL and FORTRAN. An excellent range of benefits is offered, together with a secure career offering plenty of scope for personal advancement. Ref: R3265

OPERATIONS SUPPORT
IBM MVS — c £9,000

A large well-known company with twin IBM 3032 mainframes have a requirement for two people to supplement their existing Operations Support team. A SENIOR person with approximately 3 or 4 years' good experience of MVS gained within an Operations or Technical Support area on medium to large IBM systems, and a Junior who has good knowledge of MVS gained possibly as a Shift Leader are the vacancies currently available. DAYS ONLY position with excellent company perks. Ref. 2539

SENIOR OPERATOR
IBM MVS — c. £7,000

An International Manufacturing Company requires an experienced Operator for their large multi-machine computer centre. A minimum of 2 years' experience on medium to large IBM systems with knowledge of Teleprocessing and Real-Time systems is a pre-requisite for the position. A three shift system is currently in operation with voluntary overtime at weekends. Company benefits include staff shop and free meals on shift. Site based in South London. Ref: 2277

OPERATOR
ICL — c £6,000

A Computer Site based in London has a requirement for an Operator to work on their 2956 configuration. 2 years' G11 experience is required for this position and a knowledge of DME2 would be an advantage. This vacancy would suit an applicant who is prepared to work under a 3-shift system covering Monday to Friday. Ref. 3295

OPERATOR
ICL — £4,500+

A Hertfordshire Engineering Company has a vacancy within the Computer Department for an Operator. The applicant must have 1 year's EXECLS experience and be prepared to work a three shift system. Ref: C3271

PROGRAMMER/ANALYST
WEST END — c. £8,500

An interesting vacancy has occurred for a person with 2-3 year's COBOL programming experience, together with a small amount of analysis. The company is an expanding user of IBM equipment and from the applicants point of view a knowledge of CICS and/or TOTAL database would be particularly advantageous. Interesting applications and good fringe benefits are offered. Ref: R3233

PROGRAMMER
GREATER LONDON — c £7,000

An ICL user in Greater London are seeking an experienced Cobol Programmer. A minimum of three years' experience is required, preferably to include financial and real-time applications. This is an excellent opportunity in a progressive installation offering good scope for advancement and first-class conditions of employment. Ref. R3156

PROGRAMMERS
CITY — £6,500-£8,500

A minimum of one year's BASIC+ 2 experience in a RSTSE or RSX11M + environment is required for two of our city-based clients. Both financial institutions, they offer secure positions in development teams together with outstanding opportunities to progress and excellent benefits. Ref: R3179

SHIFT LEADERS
HONEYWELL — c. £7,000

A well-known manufacturing company based West of London requires Shift Leaders with a minimum of 18 months' experience of Honeywell mainframes or minis using GCOS. A knowledge of LEVEL 6 would be an added advantage but not essential. Excellent company benefits are provided and opportunities exist for some overtime. Ref: 3284

TECHNICAL SUPPORT & SHIFT CONTROLLER
VME/B — to £9,000

A large site based in the South have a requirement for a Technical Support Specialist and also a Shift Controller. The experience required for the Technical Support Specialist is 2 years' VME/B plus good SUPERVISORY SKILLS. The successful applicant will be reporting to the Technical Support Manager and must be able to maintain VME/B at Software level and also be responsible for the enhancement of the system. This is a DAYS ONLY position. The experience required for a Shift Controller is a minimum of 18 months' VME/B plus a knowledge of SCL and MACRO's. The applicant must also have 6 months' Supervisory experience and knowledge of 1800 Hardware using G11. A standard 3-shift system is in operation. Ref. 3293

OPERATOR
BURROUGHS — £6,000

A company based in Oxford has a requirement for a Senior Operator for their B800 machine. The successful applicant will join a small friendly team and be expected to perform tasks ranging from routine Data-entry to deputising for the Operations Controller. Burroughs experience is NOT ESSENTIAL but is obviously useful. This is a DAYS ONLY position. Ref: 3270

TARGA COMPUTER SERVICES
6 Liverpool Street, London EC2M 7NH 24-hour Ansaphone 01-283 9941 (4772)

COMPUTER ADVISOR

ARABIAN GULF

A prestigious Arab financial institution seeks a Computer Advisor for a two-year contract. The position demands a mature professional with at least eight years' On-Line systems leadership and preferably with working knowledge of the Middle East.

The Computer Section is small and of high quality; it is intended that it should remain so. A twin CPU Tandem installation is in operation. The successful candidate will help to accelerate the professional development of this team.

Responsibilities will include—Detailed guidance in establishing on-line design concepts.
—Leadership of systems software function.

Credentials should include —Demonstrated record of on-line technical leadership. (Emphasis T.P. monitor and database.)
—Two years' systems experience in a financial institution. (Emphasis data security and audit.)
—Recent working experience of Tandem systems. (Emphasis Guardian, Pathway, Enscribe and Enform.)

Salary (tax free) and benefits will be substantial. Initial interviews will be in the first half of April. Resumes in confidence to Box No. 1134. (4824)

TRAFFORD METROPOLITAN BOROUGH
BOROUGH TREASURER'S DEPARTMENT

PROJECT LEADER
PO1 (6-10) £9,576 - £10,731

The Project Leader will be involved in implementing the Council's plans for extending computer usage throughout its departments on financial and non-financial applications operated both batch and on-line. New development will exploit the bank of on-line data made available by using RAMIS 11 as a database manager with remote access by terminals. The Project Leader will be expected to take a leading role to ensure that targets and objectives are achieved. Experience in local government whilst advantageous, is not essential, but a number of years' experience in systems analysis is vital and database experience would be welcome.

SYSTEMS PROGRAMMER
PO1 (2-6) - £8,631 - £9,576

The newly created post of Systems Programmer will call for at least 3 years' systems programming experience. Knowledge of MVS or OSVSI would be a considerable advantage as would an in-depth knowledge of at least three of the following: BAL, CICS, VSAM, 3705/EP and VM. Knowledge of data base language useful.

The Council operates a 4 megabyte IBM 3031 currently running under VM, DOS/VS with consideration being given to rapid development through DOS/VSE to MVS. The present network of 38 terminals will be increased by 100 during the next 2/3 years.

Application forms and further information from Miss S. Dawson. Tel. 061-969 6161, ext. 242.

Application forms returnable to the Borough Treasurer, P.O. Box 10, Warbrick House, 35/37 Washway Road, Sale, Cheshire M33 1AL, by 29th March, 1981. (4790)

PETERBOROUGH CITY COUNCIL
SYSTEMS ANALYST
SO.1 £7832-£8139

Applications are invited for the above post from personnel with previous systems experience. Knowledge of TP systems should be an advantage although not essential.

Systems will be developed on an ICL ME29 Computer utilising Database and Data Dictionary.

The Council operates a system of flexible working hours around a 37-hour week and provides in appropriate cases:

★ Actual relocation expenses incurred in House purchase/sale and removal, a disturbance grant of £100.

★ Housing accommodation or lodging allowance.

Further details and application form (returnable by March 30, 1981) available from City Treasurer, P.O. Box 8, Town Hall, Bridge Street, Peterborough, PE1 1HQ. Telephone No. (0733) 63141, Extension 539.

CONTRACT?

CICS PL1 ANAL PROGRAMMERS
Starting April, May, June, London, Home Counties and Sussex.

IMS DV/DC/ADF ANAL PROGRAMMERS

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ANALYST/ PROGRAMMER

[illegible]

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Telephone [illegible] Telex 449134

A unique opportunity in Computer Graphics

A well-established U.K. Computer Graphics Manufacturer is pioneering a new display technology, and is looking for a Computer Graphics Software Expert to contribute to this development.

If you have the necessary knowledge and background in Computer Graphics Software, and the drive and management experience to help us make a commercial success of the venture, then we would like to hear from you.

If we think you measure up to the task, we will be pleased to discuss the project with you. The rewards will be commensurate with the opportunity.

Write to Box No. 1133 (4801)

PL/1 MK IV IMS DB/DC COBOL CICS

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Whatever your background...

If you're an ambitious Systems Designer, Analyst/Programmer or Programmer with a sound background on IBM equipment and experience in one or more of the areas shown above, we can offer you a very rewarding future.

We're Informatics — a major force in the world of data processing and a respected innovator in the design and development of sophisticated computer systems. Our client list includes some of the biggest names in Commerce and Industry today. Now, the increased demand for our services throughout the UK and Europe means we're looking for a number of experienced men and women like you to join our fast moving organisation.

With Informatics, you'll become an important member of a small integrated team of professionals who enjoy real responsibility on a wide variety of challenging software projects. That's why you'll need a high degree of self motivation and flexibility together with first class communicative skills and a creative approach to solving software problems.

With Informatics, you can look forward to exceptional rewards.

If you're working on UK projects, you'll enjoy an initial salary of up to £15,000 p.a., whilst those who work on projects throughout Europe will enjoy a salary package of up to £25,000 p.a. Either way, you'll appreciate a full range of fringe benefits which includes generous business expenses. And in terms of your future, if you've the potential, we have the opportunities for career success.

So if you're looking for better rewards for your hard earned experience, join the team at Informatics. To arrange an immediate interview, make a reverse charge call to Barbara Bechtloff on 01-405 8546. Or write, with full personal and career details, to her at: Informatics Consulting Ltd., Africa House, 64-78 Kingsway, London WC2B 6AL.

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£25,000 pa in Europe

informatics consulting ltd
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MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
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We have been retained to identify and select a data communications hardware sales professional to spearhead our clients drive into the market in the South-East.

Our client is a division of a major organisation supplying computer based telecommunications and message switching systems to prestigious companies both in the U.K. and world-wide.

The division has an excellent range of modems statistical multiplexors, terminals and associated products that will have their own dedicated engineering and technical support teams.

If you have successfully sold data comms, enjoy working in a friendly team environment and want the financial and progressive career opportunities that this position offers, contact Tony McGrath for a confidential discussion and immediate interview on 01-637 9611.

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637-9611

MANAGEMENT & EXECUTIVE SELECTION

(4701)

CABLE AND WIRELESS U.K. SERVICES LIMITED

Cable and Wireless U.K. Services Limited, a subsidiary of the International Cable and Wireless Group is skilled in the design, installation and maintenance of Telecommunications and Data Processing Systems. Currently we are turnkeying commercial Data General Mini-Computer Equipment, utilising inventory control and financial software packages, to a wide range of clients with varying applications. We have also established a sophisticated communications product range including the most up-to-date switching systems and IBM compatible remote batch and interactive terminals. These developments together with our agressive marketing policy created vacancies for ambitious sales and sales support staff to contribute to our further expansion and share the benefits of our success.

Sales Executives

Selling our range of Mini Computer Systems calls for specialised hardware sales experience and a proven record of success in this field.

In return we can offer a competitive basic salary, company car and generous commission with no upper earnings limit. These are senior positions and you will be expected to make a real contribution to the policy and growth of the department.

Support Engineers

We are looking for communications specialists capable of providing pre- and post-sales support to our technically competent sales force. Specifically, you will need in-depth knowledge of message switching software and hardware and hands on experience of DEC PDP11/VAX operating under RSX11/VMS using BLISS/MACRO, OR be fully experienced in the application of bit orientated protocols as used by IBM, and packet switching networks. Salaries will be negotiable with an attractive package for the right people.

All these appointments are open to men or women and successful candidates can expect good promotion prospects, a salary which will fully reflect their skills, and the many other benefits associated with a modern Company in the forefront of technology.

To apply please contact: Susan Darby, Cable & Wireless U.K. Services Ltd., 83 Blackfriars Road, London SE1 8HQ. Tel. 01-633 9577.

UKS

Nottinghamshire County Council
Planning & Transportation

SYSTEMS ANALYST

c £8,500 p.a.

We require a professional Systems Analyst (male or female) who can take responsibility for developing major computer systems. Applicants must have at least 2 years' system experience preferably on ICL 1900 or 2900 machines.

We offer modern air-conditioned offices near Trent Bridge Cricket Ground, and variable working hours and generous removal expenses in accordance with the County Council's Scheme. This is one of the cheapest priced housing areas in the country and has excellent sporting, schooling and shopping facilities.

For further details and an application form please ring Fred Forshaw or John [illegible] on Nottingham (0602) [illegible], ext. [illegible] or write to the Director of Planning & Transportation, Trent Bridge House, Fox Road, West Bridgford, Nottingham NG2 6BJ. Closing date 23 March, 1981.

(4828)

DEPARTMENT OF COMPUTER SCIENCE
University College London

The Department of Computer Science has several vacancies for

RESEARCH FELLOWS
RESEARCH ASSISTANTS
and a
TECHNICAL OFFICER

The positions are grant supported and are typically for 2-4 years.

The research is in the field of Computer Networks. It involves Wide Area Computer Networks, Communications Satellite, Local Area Networks, and Computer Network Systems.

There are positions for Theoretical studies, simulation, application programmers, system programmers and [illegible] technical officer. Appointments will be made in the salary ranges:

Research Fellow .... £[illegible]-£12,[illegible] p.a.
Research Assistant .... £6,47[illegible]-£9,437 p.a.
Technical Officer .... £7,21[illegible]-£8,[illegible] p.a.

[illegible]

Closing date for applications: April [illegible] 1981.

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REQUIRE

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We are a young dynamic and very professional company dealing in the Leasing and Brokerage of new and used IBM computers and peripherals. We are currently looking for a Sales Executive who will be required to call upon IBM users throughout the UK and with some European Responsibilities you will report to the Sales Director.

Basic Qualifications Enthusiasm, ability, self-motivation and above all someone who's not afraid of hard work. Knowledge of IBM computers and peripherals is desirable.

A second language is useful, as we are an international company and some overseas travel may be inevitable.

Rewards. Good basic salary plus high commission should generate earnings in excess of £20,000 per annum. Company car available. Excellent working conditions and all the usual benefits associated with a young company.

Interested parties should contact Stephen J. Measures, Sales Director.

Standbrook House
2-5 Old Bond Street, London W1X 3TB

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£8,000-£11,000

Bournemouth

Systems Programmers

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Relocation Package ● Mortgage Subsidy Scheme ● Free Pension and Life Assurance ● Career Development and Training ● Subsidised Restaurant ● Staff Discount Shop ● Sports & Social Club

We are currently a single CPU OS/VS1 installation using CICS VS and BTAM, converting to dual CPUs, MVS/SP JES2, ACF/VTAM and ACF/NCP.

Other products supported by the group include COBOL/VS FORTRAN H Extended, LIBRARIAN (batch and on-line), DATAMANAGER, TESTMANAGER and SDF/CICS.

Additional staff are required to help us complete these tasks and support an ongoing expansion.

If you have 2 years experience of installing and maintaining IBM operating systems and associated packages, and Assembler programming please write or telephone for an application form to:

Tom Consterdine on Bournemouth (0202) 292373 ext. 4444

Or for further details ring:

Bob Freeth on Christchurch (0202) 477441 ext. 59 (Days) or New Milton (0425) 618092 (Evenings)

Abbey Life

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(4791)

MVS SNA CICS

A career opportunity for Computer Operations Staff

Up to £9,226 including allowances

We require a Shift Supervisor, Senior Operator or Operator to join our two-shift Operating/Control Team.

Working within a Career Graded Structure, where progression is based on the merit of the individual, there are opportunities to become an Operations Analyst, or for those with suitable aptitude a chance to join our Systems Development Department.

With the imminent delivery of an IBM 4341 to run alongside our IBM 370/135, we are looking for someone who has two years' operating experience coupled with a sound knowledge of DOS, POWER/VS or VSE, CICS, VSAM, JCL and IBM utilities, who is prepared to make a positive contribution in a progressive but demanding environment.

Contact Allen Chambers on 01-303 7777, extn. 782 or write to the Data Services Officer, Data Processing Department, 9 Brampton Road, Bexleyheath, Kent DA7 2EZ for further details and an application form. Closing date 30.3.81.

Bexley London Borough

(4787)

SENIOR PROGRAMMER

c. £7,800 Northampton

Rockware Glass is an established leader in the packaging industry with a turnover in excess of £100 million.

The Company's four UK operating sites are connected to two ICL 2950's based at our modern Head Office at Northampton. VME-K has just been installed to aid the development of new TP and Batch systems.

Candidates should be in their mid-20's and have:

- ★ At least 4 years' COBOL experience within a commercial environment.
- ★ Experience of ICL Software.
- ★ 'A' level education or equivalent.

For the right person there will be opportunities for future promotion and excellent career development in this expanding data processing division.

If you feel that you have the right experience, please write or telephone David Shilton, Rockware Glass Limited, Riverside House, Bedford Road, Northampton. Tel: 0604 21255.

ROCKWARE

(4803)

TRINIDAD NATIONAL
SOFTWARE ENGINEER

. . . to join CCS, a member of the Neal and Massy Group of Companies.

A national of Trinidad and Tobago, you must have at least three years' experience on NCR operating systems including VRX, Tranpro, Tranquest, total database and on-line Bysynch communications Protocol.

Please write, in confidence, to: Personnel Manager, Complete Computer Systems Limited, P.O. Box 544, Port of Spain, Trinidad. (4818)

UPDATE YOUR PROGRAMMING SKILLS

DEVELOP MORE EFFECTIVE TECHNIQUES USING PASCAL AS A MODEL

Dates 7-10 April, 1981

For further details contact Lynne [illegible], University of Technology, Loughborough, Leics. LE11 3TU. Telephone 0509 63171, Ext. 213.

(4825)

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Communications Software

Southern Germany: Salary to £15K

Communications Engineers from Programmer/Analyst to Team Leader level are urgently required by one of Europe's leading suppliers of communications equipment. Software Development teams, based in their R & D Headquarters, are currently engaged in the design and construction of an advanced telephony system based on Intel 8086 microprocessors. All applicants must possess at least two years' real-time software development experience on any leading mini or micro-computer and be fluent in one high-level problem-orientated language such as PASCAL, CORAL or RTL/2. For the more senior positions it is also necessary to be familiar with an Assembler language and be capable of supervising a small team of Programmers and Analysts. Initial interviews will be held in London and those who are successful will be invited to the Company's premises prior to offers of employment being made. Ref: L/11/A

Office Automation

Central London: Salary to £10K

A market leader in the areas of office automation and information science technology requires additional Programmers to join its Software Development team. Suitable candidates will be graduates with a minimum of two years' Assembler, Pascal or Basic Programming experience. It is essential that you have had exposure to either mini computers or micro-processors and preferably have a knowledge of Networking, Packet Switching or Communications. You will work as a member of a small project team developing State-of-the-Art software with particular emphasis on electronic mailing, text and word processing. Ref: L/11/A

Technical & Commercial S/W

E.E.C.: Pkg. to £16K

Technical and Commercial Software Specialists are urgently sought by a leading Dutch Systems and Software House. Applicants with a commercial background will be required to have at least 3 years' programming experience in Assembler, Basic or PL/1 on small business interactive systems. Of special interest will be candidates with exposure to established Structured Programming techniques. Technically-orientated applicants will be expected to possess expertise in Communications Networks, Message Switching or Process Control systems development. Ancillary benefits are excellent and successful applicants will be offered full relocation assistance. Ref: L/11/C

Consultants

Central London: Salary to £13K

An international Consultancy that has specialised in computers for over 20 years is now seeking additional Consultants to join its Central London Office. Suitable applicants will be graduates aged 28-32 years and will probably be currently employed by a Systems and Software House or Computer Manufacturer. You should have an understanding of problems from both a business and technical point of view and have experience of Strategic Planning, Computer Systems Implementation, Operations Research or Product and Market Planning. Of particular interest will be candidates who have worked with Real-Time Systems and have experience in the fields of Telecommunications, Office Automation, Data Base Management or Distributed Processing. Ref: L/11/D

Message Switching

Home Counties: Salaries to £13K

Senior Programmers/Designers are urgently required by a leading supplier of data and office communications equipment. Candidates should offer 3/5 years' Assembler or RTL/2 programming experience in communications and networking environments. Of particular interest will be respondents with an appreciation of the design concepts underlying "Cambridge-Ring" type systems. Whilst there is a preference for applicants who have worked on PDP 11 mini-computers or leading micro-processors, particular hardware experience is not of paramount importance. Ref: L/11/E

Software Support

W. Home Counties: Salary to £13K

A leading Total Systems Supplier requires additional Analyst/Programmers and Project Leaders to join either its Customer Support or Software Development teams. Suitable applicants will have good personal communication skills and the ability to identify and solve client problems. It is essential for all positions that you offer at least 12 months' experience of analysing commercial systems. Additionally, you should be fluent in Assembler, Basic +or COBOL and have recent exposure to mini or micro computers. Candidates who have actual or potential management abilities will of course be considered for the more senior positions. Ref: L/11/F

Process Control Programmers

N. Home Counties/EEC: Salary to £12K

Our client is one of the world leaders in the supply of Industrial Process Control Systems. Planned expansion for 1981 has produced vacancies for additional real-time Programmers to join teams engaged in the design and development of software from product planning to live running. Suitable applicants will have at least one year's experience in either Assembler, Fortran or Pascal in a mini-computer or micro-processor environment. Those who have worked with a manufacturer or who have exposure to Kent, Foxboro or Ferranti based systems will be of particular interest. Ref: L/11/G

Logistix, 10 Grenville Place London SW7 4RW

01-373 3063 LOGISTIX Telex: 28800

(4761)

CONTRACTS

SENIOR ANALYSTS ANALYSTS & PROGRAMMERS

LONDON & HOME COUNTIES

★ ICL 2900 VME/B WITH TPMS, IDMS USEFUL
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★ HP 3000 MPE IMAGE BASIC
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★ IBM OS JCL PL1 MARK IV IMS
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SAUDI ARABIA

★ IBM OS JCL PL1 IMS, MARK IV USEFUL

Please reply A.S.A.P. to:
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(4837)

IMMEDIATE CONTRACTS FOR PROGRAMMERS

MIDDLE EAST PL1		£20,000 + all expenses
IBM SYS 34 RPG II	Croydon/ London	Neg.
DEC PDP Fortran IV	Croydon	Neg.
DEC PDP Dibol CTS300	Liverpool	Neg.
DEC PDP Basic + RSTS	Surrey	Neg.

For further details please contact
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(4780)

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611
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SALES MANAGER

Computer output to micro film ● South East England

Due to internal promotion, our client, a very profitable division of a multi-million pound organisation, has retained us to identify and select a Sales Manager for its COM bureau.

The service they offer is impeccable and they jealously guard their reputation for supplying quality and innovative products. In 1981 they are confidently expecting to maintain their recent high growth rate in revenue turnover.

As Sales Manager your responsibilities will include the management of a small sales force selling both services and hardware in an account development and new business role. As a member of a management team you will have full budgetary control for the sales operation.
The remuneration package is commensurate with the importance of this position but naturally will include a 2 litre company car, pension and life assurance packages.

For a confidential discussion and initial interview contact Tony McGrath on 01-637 9611

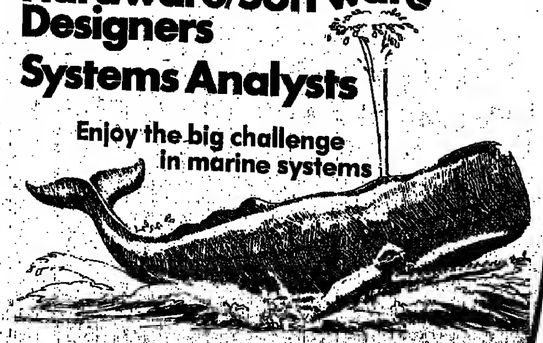
Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637-9611

MANAGEMENT & EXECUTIVE SELECTION

4787

Hardware/Software Designers Systems Analysts

Enjoy the big challenge in marine systems



The illustration has nothing to do with having a whale of a time with Plessey...We take that for granted.
The message is all about marine systems development – a fascinating business and of supreme importance.
If you are looking for a stimulating challenge, we want to talk to you about joining a first rate team of professionals developing distributed mind and microprocessor controlled real-time systems for marine applications.
If you have 3-10 years' experience as a systems analyst or hardware/software designer able to determine the right balance of hardware and software to make a viable system, then we can offer you a worthwhile career at the forefront of technology. The challenge is the hardware and software design & development of microprocessor and micro-programmable based systems using the latest LSI technology and software engineering techniques.

You should have interest & experience in real-time systems such as defence, message switching, communications, signal processing or related applications. Ideally you are experienced in RSX11M, Coral 66 or Algol, as well as in man/machine interfaces and programmable hardware.
Templecombe is a picturesque village in the heart of Somerset, yet close to Bournemouth and several large towns. Salaries will be into five figures and an excellent relocation package will make the going easy.
To discuss the matter in confidence, just ring or write giving brief career details to Robin Churchill, Technical Recruitment Manager, quoting ref TEM184 at Plessey Marine Research Unit, Wilkinhoop House, Templecombe, Somerset. Tel: Templecombe (0963) 70561.

PLESSEY electronic systems

CANADA DATA PROCESSING PROFESSIONALS

opportunities in the province of ALBERTA

OUR ORGANISATION

Alberta Government Services, Information Services Division is the central Data Processing facility for the Government of the province of Alberta. Computing Services include the operation and support of one of the largest computer centres in Western Canada. Systems Services include new development and maintenance activities associated with the challenging applications of our clients.

Our Computing Centres operate two IBM 3033's, one IBM 3031 and two IBM 370/168's under MVS/JES2. The configurations support a network of more than 600 terminals throughout the province. Software includes COBOL, Mark IV, Librarian, CICS, TOTAL, Environ 1, ADABAS, IDMS and Roscoe.

OUR REQUIREMENTS

If you have technical or applications systems/programming experience, we invite you to consider one of our challenging positions as an Intermediate or Senior Analyst, or Project Manager in our progressive organization located in Edmonton and Calgary, Alberta.

OUR OPPORTUNITIES

We offer the opportunity for advancement and professional growth in a challenging and stimulating environment. Appointment level and salary will be dependent upon experience. Benefits include contributory pension, life insurance and medical/dental plans.

Relocation assistance includes airfare to Alberta for successful candidates and their families, together with various settling-in allowances.

An interview team will be in the U.K. in April.
Please send curriculum vitae, by March 26, to:

Mr. C. Ireland,
Alberta Government Services,
c/o Manpower Mobility Offices,
Government of Alberta,
4th Floor,
22/23 Old Burlington Street,
LONDON W1X 1RL

(4798)

Alberta

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A DIVISION OF INBUCON MANAGEMENT CONSULTANTS LIMITED

SENIOR ANALYST
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For further information contact JACK COLLINGS on 0273 833848 (during office hours) or on 0273 400880 any evening after 6 p.m. (including weekends).

INBUCON MANAGEMENT CONSULTANTS LIMITED
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(4796)

INBUCON

SALES BIT

Knocking the competition

ONE of the basic rules of selling is: "Never knock the competition". This is an excellent sales discipline, but subject to misinterpretation.

Clearly, slandering rivals is not only discourteous, but implies elements of fear, envy, disrespect and possible other unendearing traits which are unlikely to gain the admiration of the potential buyer.

In other words, it's a good method of destroying personal credibility.

On the other hand, an essential responsibility of all salespeople is to gain fluency in the specification and capability of competitive products so that they have real understanding of the strengths and weaknesses of their opponents as well as their own.

To declare truthful and undeniable product-related facts is by no means deformation of a competitor's character, or professional credibility. Salespeople should not allow the "don't knock the competition" syndrome to inhibit them from highlighting their sales advantages by exposing the weaknesses of competitive products in an accurate and ethical manner.

This demands absolute discretion and sensitivity, for there is sometimes a very thin line between constructive and destructive truth.

Any reasonable code of behaviour will forbid abuse of the reputation or character of a competitor whether attack be full-frontal or merely innuendo comments such as "You can't rely on the XYZ company"; "the XYZ company don't understand the business"; "the XYZ company made a complete mess of the job"; "I hear the XYZ company is going down the tubes"; "the XYZ product is a load of rubbish."

These are all completely unacceptable, whether they be true or not. They are puerile attempts to enhance one's status artificially by virtue of the relative failure of others, and it usually has the effect opposite to the one desired.

Even the establishment of total or relative shortcomings in competitive products needs to be handled in a sensitive manner. Merely to state that "the self-start mechanism on the XYZ power unit is unreliable" is to appear jaundiced and soldey. More to the point, the comment can be self-destructive if the potential buyer subsequently reveals he has no need for the feature in question.

One of the best methods a salesperson can use to highlight the shortcomings of competitive products is firstly to establish the product features required by the potential buyer. This list can be augmented by unique benefits of the salesperson's own product that the buyer accepts as desirable. It is then a simple process to use this information for creating a matrix of feature/performance in respect of the main competitors, thus indicating their relative shortcomings without direct reference by the salesperson.

One often sees this form of analysis in Press advertising related to motor cars: "Who else provides you with an electric ashtray at no extra charge?"

There is nothing wrong with establishing that the potential buyer will not only derive significant benefit from a particular product feature, while at the same time highlighting that competitors in general, or one in particular, are either unable to supply a similar capability or match its performance.

"While the quality and speed of the ABC photocopier is similar to ours, the average cost per copy is a penny more and it does not have an auto-stacking feature." This kind of "attack" on competition is not only acceptable, but also essential in most circumstances. The salesperson can never rely on the prospective buyer having a complete dossier of information on all potential suppliers.

Another method of highlighting apparent weaknesses in competitive products is to establish the benefits of a unique feature of one's own product so firmly that it becomes a positive "want" unavailable elsewhere. This kind of opportunity does not occur very often, but needs to be exploited when it does. "The replacement of the traditional electro-mechanical servo by microprocessor control will provide you with increased reliability and reduced costs which were hitherto unovailable. Competitive products without this new facility could cost you a lot in terms of unrecovered savings."

If that is "knocking the competition" – keep at it!

Alan Williams

COURSES

A VACATION school aimed at professional design engineers and academics with experience in microprocessors is being organised by the Institution of Electrical Engineers. It will be held from March 30-April 3 at the University of Manchester Institute of Science and Technology. The idea is to allow delegates to become acquainted with some of the more advanced concepts applicable to the design of micro systems. Themes of the course are: The life cycle of a typical microprocessor-based product; contemporary software issues; microprocessor related hardware and multiprocessor systems. Further information from Christina Dagnall, IEE, Savoy Place, London WC2 0BL. Tel: 01-240 1871 ext 230.

FOR people thinking of starting a business of their own, a series of weekend courses has been designed by the London Enterprise Agency, starting on April 24. Places will be available for 30 people and the course will be held over four weekends at the School of Management Studies, Polytechnic of Central London. The course aims to help existing and potential entrepreneurs develop a business plan and then put that plan into action. The range of subjects covered includes accounts, marketing, and drawing up and making presentations to bankers. The cost of four weekends is £250, with a £150 rebate for Londoners. Details from The London Enterprise Agency, 69 Cannon Street, London EC4N 5AB. Tel: 01-236 2676.

PUZZLE ANSWER

SEVEN = 85457, THREE = 10355, ONE = 675 and THIRTY = 109312.